

**In the Name of God**

**Quarterly Journal**

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- Bibliographical information should be inserted at the end of the paper in alphabetical order as follows:  
In accordance with APA style, put the English version of an author's name in the footnote when mentioning it for the first time in the text. If the author has any colleagues (up to five persons), write their last names in the footnote. If the number of authors is higher than five, write the author's name and then add the term et al. ; the mention of all the authors' names is obligatory in the reference section. If you are to mention an author and colleagues' names for the first time, there will be no need to mention the colleagues' names in the following times; in such cases, use the term et al.
- When necessary, write the author's name and year of publication in parentheses in the text and insert the English equivalent of English terms at the end of that page. Add the name of all the instruments and expressions that are used in the text for the first time to the footnote. As much as possible, avoid using foreign words in the text.
- Final acceptance and publication of paper in the journal hinges upon the approval of the editorial board and expert reviewers. - All the articles, to be eligible for publication, should enjoy the observation of the principles and framework for Scientific-Research criteria (introduction, main body of the paper including a theoretical or conceptual framework to explain or describe the variables and their relationships, method (population, sample, sampling method, and instrument), research results and findings, discussion and conclusion, acknowledgement, and reference).
- Mention your suggestions in the last paragraph of the paper without inserting the heading of suggestions.
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- Each paper can contain up to 13 A4 pages, each containing 240 words.
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- The author(s)' name should be written in full. The author(s)' affiliation, academic degree, and email address should be mentioned below the author(s)' names.

As well, the corresponding author's name along with the full address should be written below each article.

Meta-analyses and Reviews: - Only an article will be accepted whose author has expertise in the relevant area and refers to his/her own name in the reference section (at least four times).

- The general principles of writing such papers are similar to the above-mentioned ones.

Notes:

1. The contents published in the journal are not necessarily reflective of Drug Control Headquarters' ideas. The responsibility of the contents lies with the authors are

2. Quoting the contents of this journal (Research on Addiction) with citing the source is allowed.

3. This journal, hereby, invites all the researchers, professors, and experts to submit their research papers on addiction and narcotic drugs.

4. The journal is allowed to edit, modify, and coordinate scientific terms of papers up to the point that concepts do not get distorted.

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## First words

Drug dependence and abuse are the most important problem at present and are increasingly spreading among communities. According to the annual report of the World Health in 2005, there are about 200 million people addicted to opiates in the world and the number of victims is increasing among drug users day by day. In consequence, a variety of problems, including mental, physical, familial, cultural, economic, and social disorders encompass all social and cultural boundaries and threaten human health. It is clear that young people in each country play a pivotal role in the inclusive development of that country in terms of social mobility and cultivation. On the other hand, the reduction in the age range of drug use has put many young people at risk and has created wide concern in our country.

Therefore, confrontation avoidance of and little attention to the use and abuse of drugs impose a lot of damage on the infrastructure of each country due to its harmful consequences in various economic, cultural, social, and security aspects. Now, the main question is: What measures should be taken for addiction crisis after the implementation of Joint Comprehensive Plan of Action that will lead to tremendous changes in economic, political, and cultural status. To answer this question, scholars and professors should conduct in-depth qualitative and quantitative studies to identify factors associated with addiction, to reduce demands for drugs, and to decrease the creation of negative attitudes, especially among young people. In this regard, the study and identification of the current situation and prediction of the society atmosphere in this transition period need the conduct of analyses and descriptions by researchers, which help decision-makers and managers apply appropriate policies without relying on speculations. From this perspective, it is worthy to refer to Equilibrium Theory proposed by Professor "Nash" in the 1950s. In this theory, the optimal strategy is defined and all the pieces of a puzzle are put together in a way that all communities can benefit from it. In other words, the establishment of balance of power in the Middle East whose center of gravity lies in Iran is some strategic game, but it has found a new form by the decision of the Supreme Leader (His holiness) and the wise policies made by the president, and the finish of Joint Comprehensive Plan of Action. This has clarified to some extent the political and military arrangements in the region. Now, it is witnessed that Saudi Arabia has officially announced war with Iran by supporting the USA and Israel within this equilibrium. Indeed, Saudi Arabia put any threats of violence and chaos against Iran. Consequently, changes in economic, political, social, and even cultural aspects arising from the establishment of this equilibrium requires the conduct of more analyses and scientific predictions by experts and scholars in Iran. From this perspective, it suffices to mention that we are witnessing vast business,

economic, political, and even cultural communications between the developed countries and the Islamic Republic of Iran through Iran's smooth move in diplomacy. Obviously, this huge volume of economic exchanges and economic cooperation documents that Iran has started with Russia, China, Italy, France, Germany, etc. leads to the initiation of economic and cultural developments in Iran very soon.

On the other hand, based on addiction causes and factors, we know that rapid socio-economic changes will definitely occasion pathogenic consequences, such as addiction to the Iranian people if they cannot keep society in balance and are not followed by strong theoretical backing in the fields of sociology, psychology, politics, and even ideology. Thus, according to the proverb "when you gain something, see what you have missed", we must see that there is the possibility of losing power of adjustment and becoming entangled with addiction as a result of gaining promotion and development. Hence, researchers should increasingly predict future status of addiction in the country; in other words, they should go for future studies in addiction. In this regard, this opportunity will be ahead of authors to announce that the current Quarterly Journal will be indexed in Scopus soon.

**Ali Ebadian**

**Director General of the Department of Research and Education  
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## Abstract

**Objective:** This study aimed to examine the relationship of personality traits and negative life events with coping styles by the mediating role of negative affects in drug dependent people.

**Method:** This was a correlational study wherein the number of 152 participants (drug users) completed Cloninger's

Temperament and Character Inventory, Pickel's Life Events Inventory, Positive and Negative Affect Schedule (PANAS), and Endler & Parker's Coping Inventory for Stressful Situations.

**Results:** Novelty seeking had an indirect effect on emotional coping styles. Although anger had a mediating role in this relationship, it did not play such a role in the relationship of low self-directedness and negative life events with emotional coping styles. Harm avoidance had a direct effect on avoidant coping styles. Fear and sadness played a mediating role in the structural relationship of harm avoidance and negative events with avoidant coping styles. Reward dependence had an indirect effect on avoidant coping styles. Sadness had a mediating role in the structural relationship between reward dependence and avoidant coping styles. **Conclusion:** People with traumatic personality traits show negative affects by experiencing stressful negative events, which lead to traumatic coping style, including addiction.

**Key Word:** Personality Traits; Negative Events; Negative Affects; Coping Styles

# An Evaluation of Personality Traits and Negative Life Events in Explaining Negative Coping Strategies among Drug Dependent People: The Mediating Role of Negative Affects

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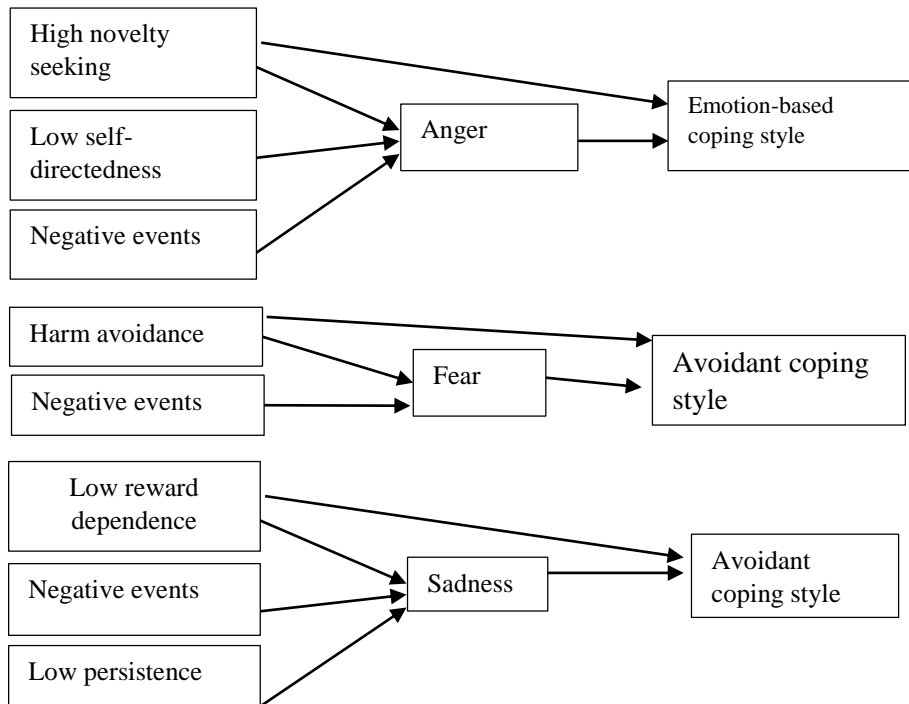
## Introduction

Drug dependence can cause physical damages, such as malnutrition, physical illness, mortality, and the risk of suicide attempt (Cooper, Russell, Skinner, Frone & Mudar, 2002; Schiffer, Pedersen, Broers, Widdershoven & Denollet, 2008, Sadock & Kaplan, 2007), family problems such as divorce, separation, and family violence; and mental health problems such as aggression, depression, stress, anxiety, and psychosomatic states (Alegría, Hasin, Nunes, Liu, Davies, Grant & Blanco, 2011), and crime (Sadock & Sadock, 2007). The problem-generating use of substances leads to a wide range of psychosocial consequences, including the difficulty in reaching life goals and the increase of interpersonal conflicts (Bondy, 1996; Sloan, Costanzo, Belsky, Holmberg, Malone, Wang & Kertesz, 2011). Despite extensive damages of drug use, the examination of underlying mechanisms of chronic drug use is the major source of awareness-raising that can promote the development of appropriate intervention strategies. Research on the etiology of problem-causing substance use refers to factors such as personality traits and emphasizes the powerful role of people's personality traits in interaction with other environmental factors with regard to the initiation and continuation of drug use (Dermody, Cheon & Munuck, 2014). Most of the people who use narcotic substances hold distinct personality characteristics. These intrinsic and specific features gradually expand and intensify the path of drug use, which means that people who are more prone to drug use suffer from more vulnerable personality traits (Oraki, Mokri & Kiai, 2013; Le Bon, et al., 2004; Arnau, Mondon & Santacreu, 2008). Cloninger has reported the existence of two main dimensions for personality: temperaments and characters. The former refers to the biological aspects of personality and contains four subscales, namely novelty seeking, harm avoidance, reward dependence, and persistence. The latter refers to the social and cultural aspects of personality and consists of three subscales, namely self-directedness, cooperativeness, and self-transcendence (Cloninger, 1987). When people with these personality characteristics are put under stressful environmental conditions, they opt for various strategies for coping. Research has clearly shown the relationship between traumatic personality traits and the possibility of drug abuse (Oraki et al., 2013, Le Bon et al., 2004, Arnau et al., 2008).

It seems people with traumatic personality traits experience high degrees of confusion, worry, distress, and stress under negative and stressful circumstances and show negative affects (Dermody et al., 2014). The process through which the negative stressful event increases risk of substance abuse has been hypothesized as negative affect model (Wills & Shiffman, 1985). According to this model, negative affects can mediate the relationship between stressful negative events and substance abuse. In particular, people use drugs to relieve the negative affect, which is created by stressful negative events (Cooper, Rachel & George, 1988). However, not all studies support the mediating role of negative

affects in the problematic use of drugs and stressful negative events (McCreary & Sadava, 2000). However, the negative affects that act as internal disorder or depressed mood have been considered as a mediator in studies on adolescents and other populations (Hussong & Chassin, 1994, Handley & Chassin, 2008). One of the possible reasons to account for the conflicting findings is the ignorance of negative affect components. One of the possible reasons to explain the conflicting findings is the ignorance of negative affect components. Recent studies have focused on the integration of the components of negative affects as mediators (Handley & Chassin, 2008) and on the role of negative affects in the problematic use of drugs (Colder & Chassin, 1993, Dermody et al., 2013). Negative affect components include fear, anger, sadness, and guilt (Watson & Clark, 1992). The researchers who use the combination of negative affect components measure the average or mean score of some specific components. In such a situation, the mediating role of negative affects may be ignored since it is possible that only a certain component of negative affects is related to drug use. For example, Hussong, Hicks, Levy & Curran (2001) showed that merely component sadness was associated with alcohol consumption among students, but other components such as anger, fear, guilt or negative affects are not so. However, that study was merely conducted on alcohol dependent individuals; therefore, this result is likely to be different from the results of studies conducted on drug users. The preferred style of people should also be given special attention, which means that people with traumatic personality traits, such as novelty seeking, high harm avoidance, low self-directedness, and low reward dependence use improper coping strategies. Therefore, the likelihood of drug use in such people witnesses an increase (Arnau et al., 2008; Oraki et al., 2013; Zuckerman, 2007; Salmani, Hassani & Arianakia, 2014). When being under stressful negative events, people with traumatic personality traits express this dominant negative affect, which often livens a special coping style in the individuals (Ball, 2004, 2005). People with low self-directedness and novelty seeking, if placed under stressful negative events, show negative affects, particularly anger; and use the preferred emotion-focused coping style. Those with low reward dependence and low persistence, if placed under stressful negative events, show negative affects, particularly sadness, which reinforces avoidant coping style in such persons (Ball, 2004, Ball, 2005, Roudsari, Alililou & Irani, 2008). With these assumptions, in some people with drug abuse or drug dependence, there is the possibility of the prevalence of a certain type of personality traits that makes them prone to experience specific negative affects and use a preferred coping style. According to these studies, when people with traumatic personality traits experience a negative stressful event, they are likely to turn to drug use to cope with negative affects resulting from negative events. It seems that people turning to self-medication via drug use lack a consistent and alternative coping strategy that reduces negative affects associated with stress (Cooper et al., 1988). Similarly, those who cannot effectively cope with the

negative affects arising from stressful factors may tend to drug use. It seems that personality traist have a significant role in this process (Zuckerman, 2007, Salmani et al., 2014, Oraki, et al., 2013, Le Bon et al., 2004, Arnau et al., 2008). According to what was mentioned, the aim of the present study was to examine the mediating role of negative affects in the relationship of personality traits and negative life events with coping styles in people with drug dependence. The hypothetical models of the study are presented below.



**Figure 1: Hypothetical models of avoidant coping style a) the mediating role of anger b) the mediating role of fear c) the mediating role of sadness**

## Method

### Population, sample, and sampling method

The statistical population of this study consisted of all the drug dependent people in Shahroud and Meyami cities who had referred to methadone maintenance treatment clinics in 2014. From among this population, the number of 152 drug dependent persons was selected in line with the inclusion criteria via random cluster sampling as the participants of the study. The criteria for the inclusion of participants in the sample were: the history of minimum 6 months of abstinence from drug use, use of traditional drugs only (opium and its syrup), and not suffering any specific mental illness other than drug use that is registered

through checking the psychiatric and medical history of the individuals, and also with patients' self-report and the information of those accompanying patients in the treatment centers. Due to the large number of questionnaires and questions, the data were collected in two stages. The questionnaires were administered individually. In total, the completion of the questionnaires approximately took 40 days.

### **Instrument**

1. Life Events Inventory: This scale was developed by Pickel (1991) and evaluates individuals' stressful life events. The short form of this scale contains 51 items, which are answered by yes or no answers representing whether the respondent has experienced an event or not. The participants should mark the events they have personally experienced during the past few years. In this test, some questions (e.g., graduation) are not considered as negative events. In this study, these questions are regarded as stressful life events if the respondent has assigned a high score to response section pertaining to stress (cited in Poorshahbaz, 1993). The test-retest reliability coefficient of the total scale has been reported equal to .78 (Poorshahbaz, 1993). In the present study, Cronbach's alpha of .74 was obtained for the scale.

2. Cloninger Temperament and Character Inventory (TCI): This scale has been constructed to evaluate personality traits and features via inheritance (temperaments) or through the environment (character). This scale consists of 125 items that are answered in yes/no modes. Indeed, the scale contains seven subscales as follows: 1) Novelty seeking, 2) Harm avoidance, 3) Reward dependence, 4) Persistence, 5) Cooperating, 6) Self-transcendence, and 7) Self-directedness. The first four subscales assess the dimension temperaments and the other three subscales assess the dimension character. Kaviani & Pournaseh (2005) reported the internal consistency coefficients of the questionnaire on seven subscales in the range of .55 to .80 while their test retest reliability coefficients ranged from .73 to .90. In the present study, Cronbach's alpha coefficient of the subscales was obtained ranging from .75 to .92.

3. Coping Inventory for Stressful Situations: This questionnaire was constructed by Endler & Parker (1990) and measures three styles, namely Emotion-, Task-, and Avoidance-oriented coping. The dominant style of each individual is determined according to his/her score in each of the three dimensions. In other words, each of the behaviors that achieves the highest score in the scale will be considered as an individual's preferred coping style. The short version of this questionnaire was standardized on a number of teachers in Iran by Farahani & Mohammadkhani (2010). This form consists of 21 items and measures triple coping styles. Coping Inventory for Stressful Situations is an instrument that can be used both for healthy adults and youth and for unhealthy populations. It can be even used for different occupational groups. The scoring of the instrument is the same for various groups. The reliability of the factors of

the scale was reported equal to .80, .83, and .72 for emotion-focused, problem-focused, and avoidance-focused styles, respectively (Jafarnejad, 2003). In the present study, Cronbach's alpha coefficients for problem-focused coping, emotion-focused coping, and avoidance-focused coping styles were obtained .81, .78, and .82, respectively.

4. Positive and Negative Affect Schedule (PANAS): This scale includes 20 items (Watson & Clark, 1992) wherein 10 items assess positive affects and 10 other items assess negative affects. The items are scored based on a 5-point scale. Negative affects contain four subscales, including fear (anger, fear, and scare), guilt (guilt and shame), anger (hostility and jittery), and sadness (distress, upset, and irritability) (Watson and Clark, 1992). Retest reliability coefficient of the scale has been reported .75. In the present study, Cronbach's alpha coefficient was obtained .81 for the scale.

## Results

The descriptive statistics and correlation matrix of the variables under study are presented in the table below.

**Table 1: Descriptive statistics and correlation matrix of the variables under study**

<i>Variable</i>	<i>Mean</i>	<i>SD</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>	<i>10</i>
Anger	5.29	1.94	1	-	-	-	-	-	-	-	-	-
Sadness	9.09	2.73	.30**	1	-	-	-	-	-	-	-	-
Fear	4.25	.84	-.08	.07	1	-	-	-	-	-	-	-
Avoidance	22.16	2.59	-.07	.31**	.03	1	-	-	-	-	-	-
emotion- focused	21.36	4.59	.43**	.14	.35**	.32**	1	-	-	-	-	-
Novelty- seeking	27.14	2.68	.29**	.20*	.39**	-.02	.33**	1	-	-	-	-
Harm avoidance	30.89	2.88	-.07	.25**	.50**	.32**	.06	.46**	1	-	-	-
Self- directedness	36.78	3.43	-.26**	-.18*	.20*	-.25**	-.26**	.32**	.50**	1	-	-
Persistence	7.73	1.56	.07	-.09	.04	.10	.03	.33**	.47**	.17	1	-
Reward dependence	21.55	2.21	.03	.13	.50**	.23*	-.02	.36**	.38**	.32**	.03	1
Negative events	50.52	4.77	.31**	.24*	.24*	.36**	.14	.04	.09	-.16	.01	.20

\*  $P < .05$ ; \*\*  $P < .01$

The results of the model fitness showed that the data fit to some extent model 1. Chi-square with degree of freedom equal to eight is 78.22 and the ratio of Chi-square to degree of freedom is equal to 8/9. Other fitness indexes are as follows: CFI=.94, GFI=.88, and NFI=.91. In the same way, for model 2, Chi-square with degree of freedom equal to four was obtained 35.25 and the ratio of Chi-square to degree of freedom was obtained 8/8. Other fitness indexes are as follows: CFI=.85, GFI=.93, and NFI=.88. In model 3, Chi-square with degree of freedom equal to seven was obtained 53.43 and the ratio of Chi-square to degree of freedom was obtained 7/6. Other fitness indexes are as follows: CFI=.89,

GFI=.92, and NFI=.93. The direct and indirect effects of the variables are presented in the table below.

**Table 2: Standard coefficients for endogenous and exogenous variables on emotional coping styles**

Variable	Anger	Fear	Sadness	Persistence	Reward dependence	Harm avoidance	Negative event	Self-directedness	Novelty-seeking
	Direct	Direct	Direct	Indirect	Direct	Indirect	Direct	Indirect	Direct
Anger	-	-	-	-	-	-	-	.35	.11
Fear	-	-	-	-	-	-	.16	.28	-
Sadness	-	-	-	.14	-	.24	-	.49	-
Emotion focused	-	-	.72	-	-	-	.13	.12	.31
Avoidant-focused	.72	.55	-	.24	.34	.33	.34	.38	.34

Significant coefficients have been underlined

In model 1, novelty seeking has a direct effect on anger ( $\beta = .221$ ,  $SE = .05$ , and  $P < .001$ ). Novelty seeking has a direct significant effect on emotion-focused coping style ( $\beta = .227$ ,  $SE = .151$ , and  $P < .001$ ). The indirect effect of novelty seeking on emotion-focused coping style is significant by the mediating role of anger (IE stand = .312). The comparison of direct and indirect effects of the standard shows that novelty seeking is affected indirectly, other than directly by emotion focused coping style. In this model, negative life events have a direct effect on anger ( $\beta = .349$ ,  $SE = .030$ , and  $P < .001$ ). Negative life events have no significant indirect effect on emotional coping styles through the mediating role of anger ( $P < .05$ ). The direct structural effect of anger on emotional coping styles is significant ( $\beta = .733$ ,  $SE = .179$ , and  $P < .01$ ). In this way, in the first model, anger plays a mediating role in the structural relationship of novelty seeking with emotional coping styles, but it does not play a mediating role in the relationship of low self-directedness and negative life events with emotional coping styles. In model 2, harm avoidance has a direct significant impact on fear ( $\beta = .162$ ,  $SE = .21$ , and  $P < .001$ ) and on avoidant-focused coping style ( $\beta = .381$ ,  $SE = .163$ , and  $P < .001$ ). The indirect effect of harm avoidance on avoidant-focused coping style is significant through the mediating role of fear (IE stand = .341). The comparison of direct and indirect effects of the standard shows that harm avoidance has more a direct effect on avoidant-focused coping style than an indirect effect. In addition, negative life events have a direct

significant effect on fear ( $\beta = .285$ ,  $SE = .030$ , and  $P < .001$ ). The indirect effects of negative events on avoidance coping style is significant through the mediating role of fear (IE stand = .341). Fear has a direct significant impact on avoidance coping style ( $\beta = .548$ ,  $SE = .581$ , and  $P < .001$ ). In this way, in model 2, fear plays a mediating role in the structural relationship of harm avoidance with avoidance coping style and also in the structural relationship between negative life events and avoidance coping style. In model 3, reward dependence has a direct negative impact on sadness ( $\beta = -.238$ ,  $SE = .98P$ , and  $P < .001$ ) and on avoidant-focused coping style ( $\beta = -.331$ ,  $SE = .193P$ , and  $P < .001$ ). The indirect effect of reward dependence on avoidant-focused coping style is significant through the mediating role of sadness (IE stand = .341). The comparison of direct and indirect effects of the standard shows that reward dependence has more an indirect effect on avoidant-focused coping style than a direct effect. In addition, negative life events have a direct significant effect on sadness ( $\beta = .495$ ,  $SE = .091$ , and  $P < .001$ ). The indirect effect of negative life events on avoidance coping style is significant through the mediating role of sadness (IE stand = .395). Overall, persistence has a direct significant impact on sadness ( $P < .05$ ). The endogenous variable of sadness has a direct significant impact on avoidance coping style ( $\beta = .733$ ,  $SE = .512$ , and  $P < .001$ ). Thus, in the third model, sadness plays a mediating role in the structural relationship of reward dependence with avoidant-focused coping style and also in the structural relationship between negative life events and avoidant-focused coping style. However, sadness does not play a mediating role in the structural relationship of persistence with avoidant-focused coping style.

## Discussion and Conclusion

This study examined the mediating role of negative affects in the relationship of personality traits and negative life events with coping styles in patients with drug dependence. The results showed that there is a significant relationship between some traumatic personality traits such as novelty seeking, harm avoidance, reward dependence, persistence, self-directedness, and negative life events with negative affects and coping styles. In the present study, novelty seeking and negative life events were revealed to have a significant positive relationship with anger and emotion-focused coping style. Similarly, there was a significant positive relationship between anger and emotion-focused coping style. This means that when people with high novelty seeking experience stressful negative events, they show negative affects, particularly anger due to their specific personality trait and, thereby, emotion-focused coping styles are activated. This finding is consistent with other research findings in this area



(Magid, Colder & Stroud, 2009; Dermody et al., 2014, Roodsari et al., 2009; Abolghasemi, Kiamarsi & Momeni, 2013). These studies clearly indicate the relationship between novelty seeking and unsuitable coping styles. People with novelty-seeking personality traits are sensation-seeking, curious, and impulsive. In addition, these people make decisions based on their instant feelings and there is very little possibility for them to make their decisions on a reasonable basis. These people do not care about laws and regulations or pay attention to laws and rules in a lesser extent than others do. Furthermore, people with the personality trait of novelty seeking seek higher levels of sensation and often turn to new high-risk behaviors without any thinking and do not pay any attention to the outcomes and consequences of such behaviors. These people are profligate, and act based on poor management on their economic life. In general, these people often experience negative affects (Cloninger, 1987). When under stressful negative events, there will be a much higher probability of experiencing negative affects in these people. In such circumstances, one's management over his/her behavior and decisions becomes weaker, the person acts impulsively and immediately, and uses inappropriate emotion-focused coping skills to solve the problems. In the present study, it was also found that the relationship between the personality trait of novelty seeking and emotion-focused coping style in indirect structural factor (through the mediation role of anger) is stronger than the direct structural factor. This means that novelty seekers may tend to new, exploratory, and risky behaviors by experiencing anger and under negative stressful events; therefore, they are likely to experience drug use (Magid et al., 2009, Roodsari et al., 2008).

In the present study, it was found that high levels of harm avoidance are negatively correlated with fear and avoidance coping style. Persons with harm avoidance are concerned about the possible negative consequences in most affairs, experience feelings of fatigue and impatience, and are irritable and sensitive. These people suffer from low self-confidence, experience worry, discomfort, and stress in social situations, especially when interacting with strangers and also suffer from a very low ability to cope even with the ordinary course of their lives. These people are unable to pursue their goals. This means that such people, when faced with a negative stressful event, become nervous and anxious and lose their self-confidence and energy, and hence negative affects, especially fear prevail such people, and they view their situations intolerable (Cloninger, 1987) and are incapable of providing solutions to solve problems. For this reason, these people experience fear and distress, especially in the face of negative stressful events, take a behavioral and psychological withdrawal position towards problems, and use avoidance coping style, which may orient them to drug use (Dermody et al., 2014, Magid et al., 2009).

Another finding of the study was the significant negative relationship of reward dependence and sadness with avoidance coping style. This means that people with low reward dependence show negative affects, particularly sadness

when faced with stressful negative events and use inappropriate coping strategies, especially avoidance strategy. This finding of the study is consistent with other relevant research findings in this area (Haren & Mitchell, 2003). Those with low reward dependence are indifferent, isolated, self-contained, and fugitive from the community. These people are oblivious to the feelings of others, act selfishly in different responsibilities, do not assign importance to the opinion of others in their performance, prefer not to enjoy emotional engagement in their relations, and are fugitive from receiving and providing social support (Cloninger, 1987). People with low reward dependence undergo exhaustion, stress, anxiety, distress, and sadness in the face of negative stressful events since they suffer from low perceived social support. Therefore, they use destructive coping strategies, such as drug use in order to extricate from the experienced negative affects (Dermody et al., 2014).

In the present study, it was found that when people with traumatic personality traits are placed under stressful conditions, they manifest their dominant negative affect, which leads to a specific coping style and provides the conditions for substance dependence. This study was conducted with a correlational design and the relationships obtained from different models should not be interpreted as causal statements. Another limitation of this study pertains to the location where it was carried out. Since it was conducted on drug dependent people of Shahroud and Meyami cities, the findings are not generalizable to other populations. Drug-dependent individuals participating in the study only took traditional drugs (opium and syrup). It is recommended that researchers test the proposed models in different communities in future studies so that evidence from the development and integration of the models can be achieved, regardless of the type of drug.

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## Abstract

**Objective:** The present study was an attempt to examine the effectiveness of therapeutic community in executive functions and autobiographical memory in people with addiction to stimulants. **Method:** This study was conducted based on a quasi-experimental research design along with pretest and posttest. From among the male stimulant users who had referred to Vardij medical center of Tehran therapeutic community, the number of 27 participants was selected via purposive sampling after the consideration of inclusion and exclusion criteria. From admission to end treatment stage of people in this center (4-month treatment), Wisconsin Test, Stroop Test, Tower of London Test, Digit Span, and Autobiographical Memory Test were used for data collection. **Results:** The results of the study showed that therapeutic community significantly improved scores of Wisconsin, Stroop, tower of London and digit span tests, as well as scores of specific autobiographical memories. **Conclusion:** Based on the effects of etiology, treatment, and prevention of executive functions and autobiographical memory on addiction, it is recommended to use therapeutic community in treatment interventions and addiction relapse.

**Keywords:** Addiction, Autobiographical Memory, Executive Functions, Stimulant, Therapeutic Community

# Effectiveness of Therapeutic Community in Executive Functions and Autobiographical Memory in People with Addiction to Stimulants

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## Introduction

Addiction is a disorder with chronic relapsing that is characterized by impulsive behaviors in search of drugs despite negative consequences of drug use (Milton & Everitt, 2012). In addictive disorders, relapsing has been defined as return to drug use after a period of abstinence. Even after years of abstinence, there is also the possibility of relapse. For this reason, addiction relapse is considered the main treatment obstacle in addictive disorders (O'Brien, 2006). Despite all the progress made in the treatment of physical symptoms of drug withdrawal, little progress has been made in the treatment of craving and desire to addiction relapse. This issue is more strongly highlighted in addiction to stimulants (Nestler, 2002). Compared with other forms of addiction, including behavioral addiction and opiate addiction, addiction to stimulants is followed by a higher number of disruptive mental and behavioral features (Alipour, Poursa'ead & Hassani, 2015). Memory is one of the most important factors associated with craving for drug use where this relationship has been recognized between stimulants and brain imaging (Ray, Hanson, Haney, Biswal & Hanson, 2015). The use of addictive drugs is followed by damages to attention, memory, and other cognitive abilities (White & Swartzwelder, 2005). Addiction reduces activity in the brain areas responsible for short-term memory, attention, and executive functions. Brain imaging studies have shown that methamphetamine use causes abnormalities in the frontal and temporal regions (Volkow et al., 2001). In previous studies, it has been found that some damages arising from the use of stimulants occur in the working memory (Bolla, Funderburk & Cadet, 2000), verbal learning (Kelley, Yeager, Pepper, Bornstein & Beversdorf, 2007), recalling the words and learning (Fox, Jackson & Sinha, 2009), and executive function (Alipour, Sa'eadpour & Peiman, 2015). Stimulants cause many abnormalities in several brain functions. These substances cause some damages to frontal, temporal and subcortical brain regions (Volkow et al., 2001). The use of stimulants leads to deficits in learning, delayed recall, information processing, and working memory (Rippeth et al., 2004). One of the aspects of memory that is affected is executive function. Group executive functions are the high-level cognitive processes that are responsible for self-regulation and goal-directed behaviors (Barkley, 1997). Defect in this ability has been recognized as a risk factor for addiction. Neurological trauma resulting from drug use relapse are among the most important damages caused by drug use (Yucel, Lubman, Solowij & Brewer, 2007).

Autobiographical memory is another memory dimension that is damaged in the process of addiction (Gandolphe, Nandrino, Hancart & Vosgien, 2013). Autobiographical memory is a memory aspect that deals with the renewal of one's personal past memories, experiences, topics, and events (Williams & Dritschel, 1988). Autobiographical memory is related to personal history, personal experiences, and the meaning of these experiences (McAdams, 2001). Autobiographical memory plays a crucial role in problem-solving process. The

autobiographical memory that is mixed with holism has a negative effect on problem solving because problem definition and production of alternative solutions require sufficient ability to use the information repertoire of memory (Williams & Dritschel, 1998).

People with substance abuse problems avoid retrieving personal memories. Eiber, Puel & Schmitt (1999) conducted a study on heroin users and showed that these individuals have undergone holism in autobiographical memory. Several studies have referred to the presence of autobiographical memory impairment in people with addiction, including alcohol users (D'Argembeau, Van Der Linden, Verbanck & Noël, 2006; Nandrino et al., 2014) and users of addictive substances (Gandolphe & Nandrino, 2010; Gandolphe et al., 2013). Holism pertaining to autobiographical memory in people with addiction is associated with decreased ability to solve problems pertinent to drug addiction (Pollock & Williams, 2001). In fact, the problem-solving ability is among the harmful factors in the individuals' lifestyle and behaviors leading to drug use (Gandolphe et al., 2013).

Therapeutic community is one of the treatments with high efficacy in increasing mental health in different patient groups, including people with amnesia, personality disorders, and addiction (De Bruin et al., 2009). Treatment of drug addiction is very complex and requires multidimensional interventions. Therapeutic community is one of the most essential components of therapy in treatment interventions of addiction domain (Levin et al., 2004). This residential treatment program provides comprehensive interventions for individuals that lead to changes in lifestyle, stability in drug abstinence, development of social skills, and reduction of high-risk behaviors (Bunt, Muehlbach & Moed, 2008). Therapeutic community is a treatment method based on group therapies, which regards the social environment as the most important factor in recovery from the use of addictive drugs (DeLeon, 2000). Decision-making, personal responsibility, and recovery along with other items of the same type are the therapeutic factors of this program (Bratter, Bratter, Radda & Steiner, 1993). It is also possible to refer to the employment of mental training, music therapy, occupational therapy, and some training for the families of the residents (Campling & Haigh, 1999), all these factors are effective in improving executive functions and autobiographical memory (Li, Wang, Chou & Chen, 2015; Raglio, Farina & Giovagnoli, 2014). Therapeutic community is effective in treatment of addiction and does not significantly differ from other treatment methods (Prendergast, Podus, Chang & Urada, 2002). In previous studies, it has been referred to the prevalence of neuropsychological problems in people with addiction participating in therapeutic community program (Fernández-Serrano, Pérez-García, Perales & Verdejo-García, 2010), which has negative effects on working, family, and social relationships of these people (Moriyama et al., 2002). In addiction intervention programs, executive function is an essential component of any successful health program (Teichner, Horner, Roitzsch, Herron & Thevos, 2002). Recent findings in this area suggest that addiction

reduces the specific aspects of autobiographical memory (Gandolphe et al., 2013). The decrease of specific aspects of autobiographical memory leads to a significant ability to predict functional competencies and negative emotions among addicts (Agnihotri et al., 2014). Holistic autobiographical memory can lead to the reduction of people's coping abilities against craving for drug use and can make the person vulnerable in the face of drug use relapse through influencing problem-solving skills (Debeer et al., 2012), rumination, decreased working memory capacity, and an increase in negative mood (Raes, Schoofs, Griffith & Hermans, 2012). On the other hand, executive functions influence problem-solving skills, cognitive flexibility, goal pursuance, and other cognitive abilities and, thereby, can lead to vulnerability and reduction of individuals' coping skills against relapse and craving for drug use (Connolly, Foxe, Nierenberg, Shpaner & Garavan 2012). Since effective addiction treatments should pay special attention to the factors effective in relapse to and craving for drug use and reduce these factors (Brorson, Ajo Arnevik, Rand-Hendriksen & Duckert, 2013), the main purpose of this study was to evaluate the effectiveness of therapeutic community in executive functions and autobiographical memory among people with addiction to stimulants.

## **Method**

### **Population, sample, and sampling method**

A quasi-experimental research design along with pretest and posttest was employed for the conduct of this study. It should be noted that selection of the control group that use no drugs at all and receive no treatment after four months of detoxification was not possible since addiction tests are given to the participants in therapeutic community per week and individuals should remain without the use of any drugs during four months of residence. Indeed, it was not possible to fully control these conditions for the control group; therefore, no control group was formed in this study. In addition, it was not possible to go for evaluation in the follow-up stage due to the residence of individuals in different cities. All the male stimulant users who had referred to Vardij medical center of Tehran therapeutic community in the second half of 2014 constituted the statistical population of the study. From among this population, the number of 27 participants was selected via purposive sampling after the consideration of inclusion and exclusion criteria. Criteria for the inclusion of participants in this study contained the successful completion of detoxification period, holding at least junior high school education, and informed consent to participate in the research. On the other hand, withdrawal from treatment, slip from treatment, and expulsion from treatment constituted the exclusion criteria. In this study, the clients were assessed in two shifts, i.e. the pretest (admission) and posttest (four months after treatment).



## **Instrument**

1. Wisconsin Card Sorting Test (WCST): This test was developed by Grant & Berg (1948; cited in Lezak, Howieson & Loring, 2004). The number of 64 cards constitutes the tools of this test. On these cards, there are some images with different colors (red, yellow, blue and/or green), different shapes (cross, circle, triangle and/or star), and different number (from one to four). This test is used to evaluate executive functions (Heaton, 1981). Three main variables, namely number of categories completed, preservative error, and total error are required in the calculation of the results of this test

2. Stroop Color and Word Test: This test was designed by Ridley Stroop in 1935 for the measurement of selective attention, processing speed, and cognitive flexibility (cited in Zare, Farzad, Alipour & Nazer, 2012). In Stroop test, subjects are presented with three cards. The first card contains several dots in green, red, blue, and yellow and the examinee is asked to name the colors. A high number of words in green, blue, yellow, and red have been printed on the second card and the participant should name the color of words regardless of the words. The words green, red, blue, and yellow have been printed on the third card with colors other than the words and the respondent should state the names of colors regardless of the meaning of words. Error and the time taken to read each card are recorded. The difference in the time taken to read the first and third cards is used as an indicator of differentiation (Ghadiri, Jazayeri, Ashayeri & Ghazi Tabatabai, 2006).

3. Tower of London Test: This test was constructed by Shallice in 1982. This test is an important instrument for measurement, planning, and organization. In this test, the scores of delayed time (from the initiation time to the first move made by the person), test time (from the first move to completion of the first attempt), total time (the sum of the delayed time and test time), the number of errors, and the total score are calculated by computer. The reliability of this test has been reported equal to .79, which is acceptable (Lezak et al., 2004).

4. Digit Span Test: This instrument is used to assess short-term memory and attention (Westerberg, 2004). This test requires attention and encoding; and the participants should keep in mind the information for a short time, perform operations on it, and then tell it (Nejati & Alipour, 2015). Alpha coefficient of the scale has been obtained .65 and its retest reliability coefficient has been reported to equal .83 (cited in Orangi, Atefvahid & Ashayeri, 2002).

5. Autobiographical Memory Test (AMT): This test was designed to measure autobiographical memory, which was first used by Williams & Broadbent (1986) in working with suicidal patients. The test includes the provision of some signs for the words with emotional connotation. The examinees are told to express the word that is recalled by the event (memory). The recalled event can be of high or low importance, can pertain to the recent or past period, but it should be a special event. In fact, the event must have happened at a certain time

and place and should take a limited duration (one day or less). Participants are given an example of what we offer as exclusive. For example, the response “I usually enjoy a party” is not correct for the word “enjoyment” since it does not refer to a specific time or place. Thus, the response “Ali’s party on last Friday” is correct. During some attempts, it is ensured whether the participants have properly understood the training. Williams & Broadbent (1986) considered one minute for giving answers. In subsequent studies, 30 seconds was considered necessary to provide answers. Failure to respond within the specified time is coded as specific; otherwise, it is coded as non-specific or extremely coded. In this analysis, only the coding pertaining to specific memories enters the study.

### **Procedure**

Therapeutic community consists of a 4-month period wherein the participants enter the therapy after detoxification. Daily predetermined programs, including psychosocial training, occupational therapy, music therapy, group therapy, and individual psychotherapy were offered to the participants, addiction tests were given to the participants per week, and the participants were extremely controlled in order not to take drugs. For executive functions in this study, Wisconsin Card Sorting Test was used to assess set shifting, Stroop test was used to assess inhibition, Digit Span test was used to assess working memory, and the Tower of London test was used to evaluate planning and organization. During the study, two experimenters took an active part and conducted the evaluations in a room with proper psychometric conditions in a quite favorable situation. These tests were administered by giving examples and detailed explanations about them.

### **Results**

The mean and standard deviation for the age of the participants were 31.5 and 7.30, respectively. In terms of marital status, 51% of the participants were married and 49% were single. Furthermore, 81% of them were employed and 19% were unemployed. The mean and standard deviation for the duration of drug use (such as cocaine and amphetamines) among the participants were 6.4 and 3.10, respectively. To investigate the difference between pre-test and post-test scores, t-test was used. One of the assumptions of using this test is the normal distribution of the data. To this end, Kolmogorov-Smirnov test was run and its results are provided in the table 1.

**Table 1: Results of Kolmogorov-Smirnov test representing the normality of distribution**

	<i>Mean</i>	<i>SD</i>	<i>Positive difference</i>	<i>Negative difference</i>	<i>Z score</i>	<i>Sig.</i>
<b>Wisconsin (pre-test)</b>	95.03	25.12	.16	-.11	.84	.478
<b>Wisconsin (post-test)</b>	77.04	16.73	.09	-.13	.68	.738
<b>Stroop (pre-test)</b>	100.04	14.40	.13	-.07	.72	.674
<b>Stroop (post-test)</b>	91.37	10.85	.07	-.11	.60	.860
<b>Tower of London (pretest)</b>	451.40	57.87	.09	-.11	.57	.898
<b>Tower of London (post-test)</b>	433.00	32.33	.06	-.09	.50	.961
<b>Autobiographical Memory (pre-test)</b>	8.35	2.54	.10	-.14	.71	.689
<b>Autobiographical Memory (post-test)</b>	6.11	2.19	.09	-.13	.72	.673
<b>Digit Span (pre-test)</b>	3.41	1.11	.16	-.18	.95	.324
<b>Digit Span (post-test)</b>	2.22	1.31	.16	-.13	.83	.495

The results of t test analysis for Stroop test are presented in the table below.

**Table 2: Results of t test analysis for Stroop test**

<i>Variable</i>	<i>Pre-test</i>		<i>Post-test</i>		<i>T test results</i>		
	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>	<i>df</i>	<i>t</i>	<i>Sig.</i>
<b>Time of the first stage</b>	22.70	3.79	21.74	3.43	26	1.32	.198
<b>Error of the first stage</b>	2.37	1.36	1.67	.92	26	3.54	.002
<b>Time of the second stage</b>	22.93	3.65	22.26	3.33	26	1.67	.106
<b>Error of the second stage</b>	1.93	1.07	1.15	.77	26	3.15	.004
<b>Time of the third stage</b>	33.15	5.23	32.26	5.53	26	.98	.333
<b>Error of the third stage</b>	4.67	2.96	3.04	1.19	26	2.55	.017
<b>Time difference between the first and third stages</b>	11.30	4.30	9.26	4.34	26	2.21	.036

As it can be observed in the above table, therapeutic community has reduced errors in the three stages and difference in scores. The results of t-test for the variables of Wisconsin Card are presented in the table below.

**Table 3: Results of t-test for the variables of Wisconsin Card**

<i>Variable</i>	<i>Pre-test</i>		<i>Post-test</i>		<i>T test results</i>		
	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>	<i>df</i>	<i>t</i>	<i>Sig.</i>
<b>Completed categories</b>	2.33	1.56	3.04	1.19	26	-3.42	.002
<b>Preservative error</b>	30.52	12.15	26.59	9.29	26	1.71	.098
<b>Total error</b>	60.48	18.99	44.30	11.34	26	7.16	.0005
<b>Failure to maintain the categories</b>	3.11	1.47	1.70	1.23	26	5.46	.005

As it can be observed in the above table, therapeutic community has reduced errors and failure to maintain the categories and has increased the scores of

completed categories in Wisconsin Card test. The results of t-test for Digit Span test are presented in the table below.

**Table 4: Results of t-test for Digit Span test**

<i>Variable</i>	<i>Pre-test</i>		<i>Post-test</i>		<i>T test results</i>		
	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>	<i>df</i>	<i>t</i>	<i>Sig.</i>
<b>Completed categories</b>	2.22	1.31	3.41	1.11	26	-3.92	.001

As it can be observed in the above table, therapeutic community has increased the scores of Digit Span test. The results of t-test for Tower of London test are presented in the table below.

**Table 5: Results of t-test for Tower of London test**

<i>Variable</i>	<i>Pre-test</i>		<i>Post-test</i>		<i>T test results</i>		
	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>	<i>df</i>	<i>t</i>	<i>Sig.</i>
<b>Total time</b>	204.41	28.02	194.89	16.22	26	2.61	.015
<b>Delay error</b>	26.11	6.84	22.74	5.46	26	3.88	.001
<b>Test time</b>	122.89	23.57	171.44	11.95	26	1.83	.078
<b>Error</b>	22.07	4.69	19.22	3.22	26	3.79	.001
<b>Point</b>	20.93	5.02	24.70	3.19	26	-3.99	.0005

As it can be observed in the above table, therapeutic community has reduced total time, test time, and error and increased the scores of points. The results of t-test for Autobiographical Memory are presented in the table 6.

**Table 6: Results of t-test for Autobiographical Memory**

<i>Variable</i>	<i>Pre-test</i>		<i>Post-test</i>		<i>T test results</i>		
	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>	<i>df</i>	<i>t</i>	<i>Sig.</i>
<b>Specific</b>	6.11	2.18	8.48	2.59	26	-3.61	.001
<b>Positive</b>	3.09	1.49	4.48	1.76	26	-3.05	.005
<b>Negative</b>	3.16	1.18	4.06	1.68	26	-2.23	.034

As it can be observed in the above table, therapeutic community has increased the scores of all the three types of Autobiographical Memory.

## Discussion and Conclusion

The results of data analysis showed that therapeutic community improves executive function in people with drug addiction. Due to the use of music therapy, occupational therapy, and training in therapeutic community, the results of this study are consistent with those of previous research (Karimi, Zare & Hadianfard, 2011; Bahmani, Zandi Ghashghai & Khosravi, 2014; Lee et al., 2015; Raglio et al., 2014) and the results suggest that occupational therapy improves executive functions (Vizzotto et al., 2014). Today, therapeutic community is recognized as a treatment with positive results, lower costs, lasting changes, and provision of multidimensional training programs (including

behavioral patterns, group therapy, psychosocial training, individual psychotherapy, and creation of an environment free of drugs) and plays a major role in the treatment of addiction. This treatment program can treat not only addiction, but also a wide range of psychiatric disorders axis I and II. This treatment program leads to the acceleration of treatment process by modifying behavior patterns, observational learning, training, group therapy, and spending a relatively long time in an environment without the stimulant drugs (Haigh, 2015). There is a relationship between cognition and music. Collier & Logan (2000) believe that short-term memory holds a better function when it enjoys alternate rhythmic auditory stimulations than when visual stimulation is used. Music leads to memory improvement through mental imagery (cited in Khalaf Beigi, Bayanzadeh, Zadehmohamadi & Shafadavoodi, 2006). Gregory (2002) believed that the persistence of music attention is effective in cognitive processes, particularly with indirect focusing on joyful experiences. There are several signs and clues that indicate the neural networks specific to music process in the brain act independently and separately (independent of other neural structures) (cited in Khalaf Beigi et al., 2006). Recent studies have confirmed music effectiveness in the production of alpha brain waves (Ericsson, 2006) and the temporal brain activities (Malayeri, Jafari & Ashayeri, 2005). Music is widely used to improve health, reduce stress, and ward off the unpleasant symptoms. Music also exerts direct psychological effects on the autonomic nervous system. Music leads to the construction and enhancement of connections between neurons in the cerebral cortex. This means that, in the environments with music, cycles of neurotransmitters between neurons are created and stimulate higher parts of the nervous system that pertain to memory and cognition (Kemper & Danhauer 2005).

Occupational therapy can be effective in reducing memory problems and act as a factor in reducing stress through the preparation and development of regular working programs in line with individual interests and specialties. Occupational therapy is effective in improving cognitive deficits by the review of past abilities of people and creation of an opportunity to practice these skills again. In addition, occupational therapy leads to the establishment of social interaction, relaxation, and the reduction of anxiety through the social environments it provides. All these items can be effective in the improvement of cognitive function (Ng et al., 2006). To account for these findings, one can refer to the improvement of the quality of life for these people (González-Saiz et al., 2011). This improvement of the quality of life is one of the factors effective in improving cognitive and executive functions (Giovagnoli et al., 2014). Moreover, therapeutic community plays a major role in changing the lifestyle of people by means of such factors as music therapy, occupational therapy, regular physical exercise, and mental training. As per the recent studies, all these factors have been found effective in improving executive functions (González-Saiz et al., 2011).

The results also showed that therapeutic community is associated with an increase in specific memories. Persistence in drug abstinence and not using drugs for the duration of several months may improve the cognitive abilities and brain structures of drug users. These cognitive abilities and brain activity improvement play an important role in the specificity of autobiographical memory. Depression disorders share about 47 to 93 percent comorbidity with substance abuse disorder and it has been proven that therapeutic community is effective in the improvement of depression (Carr & Ball, 2014) and depression is the most important reason for autobiographical memory dysfunction (Kong, He, Auerbach, McWhinnie & Xiao, 2015). Thus, one can indirectly conclude that this therapy may be effective in improving autobiographical memory in people with addiction. Depression is the leading cause of autobiographical memory dysfunction. Retrieval of past memories is sometimes painful and people try to suppress memories or avoid recalling such memories along with their negative emotions. This phenomenon is widely observed in depression disorder (Beblo et al., 2012). However, these efforts are associated with counterproductive results. In fact, attempts to suppress these memories strengthen negative memories (Dalgleish & Yiend, 2006). As a result, rumination along with a repetition cycle results in the mandatory recall of negative memories escalation and continuation of depression (Gotlib & Joormann, 2010). Holistic autobiographical memory is considered among the main reasons for addiction relapse and craving (Brorson et al., 2013) through the negative effects it exerts on the ability to solve social problems, planning future programs, emotion regulation (Raes et al., 2005), and depression.

In general, therapeutic community is an effective method wherein the clients receive trainings and services towards stable and long-term drug abstinence. Such trainings and services lead to stepwise and effective change in individuals' attitudes towards different life affairs, including drug use. One of the limitations of this study was the conduct of this study only on one gender due to lack of community treatment centers for women. Other limitations of this study are the unavailability of the follow-up stage and lack of control of comorbid disorders such as depression. Hence, it is suggested that future studies examine the impact of these factors.

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## Abstract

**Objective:** This study aimed at comparing addicts' quality of life and psychological disorders based on two methods, i.e. an educational method (Narcotics Anonymous) and a medicinal method (Methadone Maintenance Treatment). **Method:** An ex post facto research design was used in this study. Using purposive sampling, a number of 217 male Neurotics (110 NA, 107 MMT) was selected from Shahrekord City. Quality of Life Questionnaire and Depression, Anxiety and Stress Scale (DASS-42) were utilized to collect data. Results: According to the results of multivariate analysis of covariance, in terms of life quality, status of NA group members was more desirable as compared with the MMT group. Considering the three psychological disorders, NA group members were in a better condition than the methadone treatment group. An increase in the membership duration in NA was associated with lower levels of depression and physical pain and higher levels of general health and positive emotions. **Conclusion:** Therapeutic community approach was revealed to be more adequate in improving the quality of life and reducing psychological disorders, and may be considered as a desired method of treatment.

**Keywords:** quality of life, psychological disorders, NA, MMT

# Addicts' Quality of Life and Psychological Disorders (depression, anxiety and stress) in two Treatment Methods: Narcotics Anonymous vs. Methadone Maintenance Treatment

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## Introduction

Addiction is chronic intoxication which is the outcome of the use of natural or industrial medicine, and results in dependency. For this, World Health Organization used the concept of 'dependency' for addiction which originates from a prolonged period of use of substance or a combination of substances which leads to tolerance or withdrawal when one stops using. The term 'use disorder' is used instead of addiction. In classification of psychological disorders, for example, addiction is attributed to abuse of substances like alcohol, heroine etc. which entails problems such as a change in thinking, emotions and behavior (Ganji, 2014). This matter has been turned to a family crashing disaster, a social predicament and a great therapeutic challenge. Addiction and the resulting diseases and chronic disorders like hepatitis and AIDS, divest the sufferers of thinking, working and creativity power and, along with damage to their employment and family, decrease their quality of life. Some studies suggest a direct negative correlation between substance abuse and life quality, and a convergence between addiction and psychological disorders symptoms like depression and anxiety (Carpentier et al., 2009; Ghamari 2012; Bukstein, 2000). Therefore, to tackle the drug abuse and its destructive effects various kinds of confrontational, legal, therapeutic, and educational- pedagogical strategies are used. In the educational-pedagogical strategy, in addition to therapy focused on the behavioral and mental principles of personal growth, there are efforts to help the sufferer in the rehabilitation process, and by discarding displeasing experiences of treatment period his quality of life improves. The aim of these treatment programs, in addition to cutting dependency, is to restore health to the addict's life; and to empower them to prevent the relapse of drug abuse.

Life quality as a health index, is a dynamic concept for individual's perception of the relative condition of health and other non-medical aspects of life, and specifies their evaluation about their physical health, mental condition, social relations, independence level and emotional concerns (Alder, Porter, Abraham & Tychln, 2009). The World Health Organization (1993) defines life quality as individuals' perception of their life in their cultural context, value system, objectives, expectation and standards; and outlines four dimensions of physical health, psychological health, social relations and relation to the environment. One of the educational pedagogical strategies is a therapeutic community of narcotic anonymous (NA). The community has focused its improvement program on the personal revolutionary plan and tries to make a total change in people's lifestyles with the aid of fellows' support. Therefore with the resulting conscious and accountable attitude toward themselves, individuals redefine their role in life, and consciously and productively reconnect to the others and the world (white et al., 2013). The NA treatment process includes twelve-step program in three dimensions of self-help, social support and spirituality lifting (Moos 2007). The community's treatment approach is based on the social participation and cooperative teamwork and leads to personal growth,

accountability and individual independence. This program, in the spiritual lifting phase, deals with individuals' awakening to their need of spiritual strength and gaining power from that and, in social support phase, focuses its improvement plan on every single sufferer's help to one another and drives them to make conversations and exchange experience in discussion circles. Hence, on the basis of this method, the sufferers, in discussion circles, review the problems, help each other with the reconsideration of matters and come to realize their responsibility for the treatment (Kelly, Urbanoski, Hoepfner, & Slaymaker 2011). Advocates of this method believe that the social context and the sufferer's interaction with the fellows who have the common perception of the problems and have faced the treatment problems, is a major factor in accountability and endurance for the treatment progression (Kelly & Urbanoski, 2012; Moos, 2007). The NA's aim has been stated as to make a major change in lifestyle such as avoiding drug, developing honesty and a sense of responsibility; and the various researches have demonstrated its success in improving the quality of life and decreasing the psychological disorders, in addition to participants' addiction break. For instance, Moos and Moos (2005), in their study on two groups of alcoholics showed that the group which in addition to receiving professional medical services have participated in alcoholics anonymous, had better improvement process, endurance in stopping drinking and higher quality of life. Bavi and Borna (2010) showed the rehabilitation period effectiveness of the therapeutic community on decreasing negative self-concept, anxiety and depression of voluntarily referred addicts. Beygi (2012) in his study showed that active participation of addicts in NA and following the 12-step principles leads to advancement in social and religious activities and enhancement of their quality of life. Sotoode-Asl, Behnam and Ghorbani showed that NA sessions could improve the personality attributes scores (introversion, extroversion, psychosis, neurosis) of narcotics-dependents. Saleh Moghadam, Bazaz Kahani and Vagheei (2013) in investigation of three groups of NA, therapeutic community, and methadone maintenance therapy (MMT), illustrated that the NA group members gained higher scores in all dimensions of life quality compared to other two groups. On the other hand, MMT could also be a successful treatment for addiction. This program, based on the medicinal treatment tries to control the withdrawal syndrome originating from substance abuse stop by replacing methadone with the narcotics; and in many cases it proved its effectiveness in psychological condition and mental wellbeing during the avoiding period. However, findings about the effect of MMT on the life quality and psychological symptoms are conflicting. For example, Huong, Guan, Nordin, Adlan & Habil (2009), Chou et al. (2013), Rohani, Salarieh, Abedi and Kheyrikhah (2013) and Lashkari poor, Bakhshani and Sajadi (2012) investigating the life quality of addicts going through MMT, showed that the method contributes to improvement of different aspects of addicts' quality of lives. Poor Naghash Tehrani (2009) showed in his study, that the level of anxiety and

depression symptoms in MMT declines. On the other hand, some studies have shown that people under the MMT have demonstrated higher level of mental health problems, compared with ordinary individuals. Peles, Schreiber, & Adelson (2006) have shown that the majority of people under MMT experience temperamental and emotional disorders like depression and anxiety. Carpentier Et al. (2009) in a research on the 193 addicts under the MMT found that 78 percent of participants had psychiatric problems (temperamental disorders 60%, anxiety disorders 46%, personality disorders 65%) and enjoyed low quality of life and needed more psychological services. On that account, the need for a decisive and effective therapy calls for a precise evaluation and comparison of different methods since life quality is a multi-dimensional concept which could be brought into consideration when choosing proper method to face addiction. Since disorders such as anxiety and depression play major roles in addict's relapse (Miller, 1995), investigation of these in different treatment methods seems to be necessary. Thus, the aim of the present study was to compare the life quality and psychological disorders (anxiety, depression, stress) in two addiction treatment methods (NA and MMT).

## **Method**

### **Population, sample and sampling method**

As the present research, with the aim of realizing the better addiction treatment method, compares the addicts' life quality and psychological disorders conditions under two treatment methods, NA and MMT, the research methodology is *ex post facto*. The statistical population was comprised of male addicts in recovery in two groups of MMT and NA in Shahre-Kord city who were selected using purposive sampling and put into two groups A) MMT (including 107, mean age of 32.9 and mean years of drug abuse of 8.8) and B) NA (including 110, mean age of 32.8, mean years of drug abuse of 7.1) who have stopped using narcotics at least for 3 month. First MMT group was selected and then, based on their demographical characteristics, the NA group was sampled.

### **Instruments**

Depression Anxiety Stress Scale-42: the scale is a 42 item self-report developed by Lovibond & Lovibond (1995) and is increasingly used in different contexts (Crawford & Henry, 2003). To examine the scale convergent validity, Lovibond & Lovibond used the Beck Depression Inventory (BDI) and Beck Anxiety Inventory (BAI). The correlation between the Depression scale of this questionnaire and Beck Depression Inventory (BDI) was reported to be 0.74 and the correlation between the Anxiety scale and Beck Anxiety Inventory (BAI) came out 0.81. Also, test-retest reliability for the Depression, Anxiety and Stress

scales were reported 0.71, 0.79 and 0.81 respectively. This scale validity was put to test by Afzali, Delavar, Borjali and Mirzamani (2008) using the three questionnaires of Beck Depression Inventory (BDI), Self-rating Anxiety Scale (SAS) and Students Stress Scale (SSS). They reported the correlation between the Depression scale and BDI 0.85, and that of the Anxiety scale and SAS 0.83, and that of Stress scale and SSS 0.76. They have also reported Cronbach's alpha for the Depression, Anxiety and Stress Scales to be 0.94, 0.85 and 0.88 respectively. In the present study Cronbach's alpha for the Depression, Anxiety and Stress came out 0.88, 0.81 and 0.84 respectively.

Short Form Health Survey- 36: the questionnaire was developed by Ware & Sherbourne in United States and has been translated to different languages and there is evidence that it has enjoyed great reliability and validity in various populations (Montazeri, Gashtasbi, Vahdanian & Gandek, 2005). Short Form Health Survey assesses 8 concepts concerning health in two general components: physical component score and mental component score. The items of the physical component include physical function, role physical, bodily pain, general health; and the items of mental component include role emotional, vitality, social function and mental health. The higher score in any of these subscales means a higher level of life quality. This questionnaire was validated by Montazeri et al. (2005) in a sample group of 4163 people in Iran and the result indicates an adequate reliability and validity. The Cronbach's alpha for the physical function, role physical, bodily pain, general health was reported 0.90, 0.85, 0.83 and 0.71 respectively, and for role emotional, vitality, social function and mental health it came out 0.84, 0.65, 0.77 and 0.77 respectively. The questionnaire was also validated by Motamed, Ayatollahi, Zare and Sadeghi Hasan Abadi (2003) and Asghari Moghadam and Faghihi (2004) and the results confirm its validity and reliability. In the present study Cronbach's alpha for physical function, role physical, bodily pain, general health was reported 0.83, 0.53, 0.74 and 0.82 respectively, and for role emotional, vitality, social function and mental health came out 0.32, 0.68, 0.55 and 0.73 respectively.

## **Results**

Descriptive statistics for demographic variables of selected samples are presented in the following table.

**Table 1. Descriptive statistics for demographic variables of the selected samples**

<i>variables</i>		<i>MMT sample</i>		<i>NA sample</i>	
		<i>frequency</i>	<i>Percent frequency</i>	<i>frequency</i>	<i>Percent frequency</i>
<b>Marital status</b>	<b>married</b>	61	57	64	58.2
	<b>single</b>	44	41.1	41	37.3
	<b>divorced</b>	1	0.9	5	4.5
	<b>Widow</b>	1	0.9	0	•
<b>Education</b>	<b>primary</b>	8	7.5	5	4.5
	<b>secondary</b>	25	23.4	36	32.7
	<b>diploma</b>	61	57	50	45.5
	<b>higher</b>	13	12.1	19	17.3
<b>Parents' addiction</b>	<b>Father</b>	32	29.9	35	31.8
	<b>Mother</b>	1	0.9	2	1.8
	<b>Both</b>	2	1.9	2	1.8
	<b>None</b>	72	67.3	71	64.5
<b>Number of times stopped</b>	<b>one</b>	15	14	10	9.1
	<b>two</b>	18	16.8	29	26.4
	<b>More than two</b>	74	69.2	71	64.5
	<b>opium</b>	33	30.8	41	73.3
<b>Narcotics</b>	<b>Heroin</b>	64	59.8	54	49.1
	<b>opium sap</b>	10	9.3	10	13.6

To examine the goodness of fit of the two groups demographically, parametric tests were used as follow.

**Table 2. The Chi-square test result to examine the goodness of fit**

<i>Variables</i>	<i>Chi-square</i>	<i>df</i>	<i>Sig.</i>
<b>Marital Status</b>	3.8	3	0.28
<b>Education</b>	4.85	3	0.18
<b>Parents' Addiction</b>	0.43	3	0.95
<b>Number Of Times Stopped</b>	3.6	2	0.17
<b>Narcotics</b>	2.67	2	0.26

As the expected frequency in the fields of marital status and parents' addiction was less than 5, therefore for these features, the significance test of Exact for Pearson Chi-square was used. As indicated in Table 2. Results show that there is no significant difference between the two groups of NA and MMT patients in any of the demographic variables: marital status, education, parents' addiction, number of times stopped ( $P>0.05$ ).

**Table 3. The result of t-test to examine the goodness of fit of the two groups by age and years of use**

<i>variables</i>	<i>MMT</i>		<i>NA</i>		<i>t</i>	<i>df</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
<b>age</b>	32.89	8.8	32.85	7.1	0.03	215
<b>Years of use</b>	8.44	5.71	6.89	5.81	1.98*	215



As shown in the presented tables, there is no significant difference by age between the NA and MMT patients ( $P>0.05$ ). Hence, it appears that age has the same possible effect on the variables in both groups; but there is a significant difference by the years of substance use between them. Therefore, it seems that the possible effect of this feature on investigating variables is not the same. On that account, this feature has been considered as the covariate in ANCOVA in order to eliminate its effect in both groups.

**Table 4. Statistical analysis of the subscales life quality, depression, anxiety and stress**

<i>variables</i>		<i>MMT</i>		<i>NA</i>	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
SF-36	physical function	20.04	4.34	23.30	3.78
	role physical	5.08	0.87	5.73	1.28
	bodily pain	7.91	1.81	4.83	1.94
	general health	14.43	3.33	19.45	2.21
	role emotional	3.88	0.63	4.45	0.99
	vitality	12.69	3.48	16.04	3.42
	mental health	16.67	3.51	20.70	3.95
DASS-42	social function	4.99	1.64	7.12	1.63
	depression	26.03	5.95	19.02	7.23
	anxiety	17.61	5.52	12.37	5.91
	stress	24.98	6.18	1.932	6.56

To examine the difference between groups in investigating variables, ANCOVA ought to be used and in order to test the assumption of equality of variances Levene's test was run.

**Table 5. Levene's test for equality of variances**

<i>subscales</i>	<i>F</i>	<i>df1</i>	<i>df2</i>	<i>significance</i>
<b>depression</b>	2.560	1	215	0.12
<b>anxiety</b>	0.050	1	215	0.82
<b>stress</b>	2.390	1	215	0.12

As seen in the table above, the assumption of equality of variances is observed. The ANCOVA result suggests a significant difference in linear combination of variables between the two groups ( $P<0.001$ ,  $F=21.470$ , (Wilks' Lambda=0.77)). To investigate the difference patterns, one-way ANCOVA was used as follow.

**Table 6. The result of one-way ANCOVA to examine the difference patterns**

<i>variables</i>	<i>F</i>	<i>df</i>	<i>Sig.</i>	<i>Partial Eta Squared</i>
<b>depression</b>	58.30	1	0.0005	0.21
<b>anxiety</b>	40.87	1	0.0005	0.16
<b>stress</b>	38.49	1	0.0005	0.16

As shown in Table 7. The result of one-way ANCOVA showed that by eliminating the effect of drug abuse duration and considering Bonferroni adjusted alpha value (0.017), there is a significant difference between two groups in three variables of depression, anxiety and stress. Looking at the descriptive statistics, it has been shown that MMT patients have gained higher scores in the subscales depression, anxiety and stress than the NA members. As such, it seems that the NA patients are in a better condition.

**Table 7. levene's test of equality of variances in the subscales of Short Form Health Survey**

<i>variables</i>	<i>F</i>	<i>df1</i>	<i>df2</i>	<i>Sig.</i>
<b>physical function</b>	1.29	1	215	0.22
<b>role physical</b>	0.83	1	215	0.42
<b>bodily pain</b>	1.41	1	215	0.19
<b>general health</b>	1.38	1	215	0.21
<b>role emotional</b>	1.11	1	215	0.24
<b>vitality</b>	0.51	1	215	0.47
<b>mental health</b>	1.38	1	215	0.18
<b>social function</b>	0.19	1	215	0.66

As seen in the Table 7 above, the assumption of equality of variances in all items is met and using the MANCOVA is authorized. The results of MANOVA suggest a significant difference in linear combination of variables in both groups ( $P < 0.001$ ,  $F = 21.20$ , Wilks' Lambda = 0.55). To examine the difference patterns, ANOVA was used.

**Table 8. The result of ANCOVA for examining the difference pattern**

<i>variables</i>	<i>F</i>	<i>df</i>	<i>Sig</i>	<i>Partial Eta Squared</i>
<b>physical function</b>	30.64	1	0.0005	0.13
<b>role physical</b>	17.64	1	0.0005	0.08
<b>bodily pain</b>	141.53	1	0.0005	0.40
<b>general health</b>	68.66	1	0.0005	0.24
<b>role emotional</b>	23.49	1	0.0005	0.10
<b>vitality</b>	51.05	1	0.0005	0.19
<b>mental health</b>	59.43	1	0.0005	0.21
<b>social function</b>	95.69	1	0.0005	0.31

As indicated in Table 8. above, the result of one-way ANCOVA showed that by eliminating the effect of drug abuse duration and considering Bonferroni adjusted alpha value, there is a significant difference between the groups in 8 dimensions of physical function, role physical, bodily pain, general health, role emotional, vitality, mental health and social function. Considering the descriptive statistics, NA group is in a better condition than MMT group in all dimensions of quality of life.

Other findings suggest a relationship between the membership duration in the NA and the level of life quality and the psychological disorders. To investigate this relationship among the NA group member, Pearson's Coefficient was used.

The mean and standard deviation of the duration of NA membership were 19.28 and 17.7 respectively. The results of Pearson's Correlation have been presented in the following table.

**Table 9. The results of Pearson's Correlation Coefficient for Duration of membership in NA and investigating the variables**

<i>variables</i>	<i>depression</i>	<i>anxiety</i>	<i>stress</i>	<i>physical function</i>	<i>role physical</i>	<i>bodily pain</i>	<i>general health</i>	<i>role emotional</i>	<i>vitality</i>	<i>mental health</i>	<i>social function</i>
<b>Membership duration</b>	-.26 **	-0.05	-0.08	0.07	0.17	-0.21*	.31 **	0.26 **	0.14	0.12	0.16

\* $P < 0.05$ , \*\* $P < 0.01$

As Table 9. shows, there is a negative correlation between the membership duration in NA and depression ( $r = -0.26$ ) and physical pain ( $r = -0.21$ ) and a positive correlation between membership duration and general health ( $r = 0.31$ ) and role emotional ( $r = 0.26$ ). In other words, as the membership duration in NA extends, depression and physical pain decline, and general health and role emotional increase.

### Discussion and Conclusion

Different confrontational, legal, therapeutic and educational training strategies have been resorted to in order to tackle the substance abuse and its devastating consequences. With the aim of identifying a more appropriate method of addressing addiction, the present study compared the life quality and psychological disorders (depression, anxiety and stress) in two methods of MMT and the therapeutic community of NA. The results show that NA group members demonstrate better conditions in both variables, life quality and psychological disorders. Regarding the quality of life, the mean scores of NA members in both physical and mental dimensions were significantly higher than those of the MMT members, and the significance of difference was confirmed about the internal elements of each dimensions of life quality (physical function, role physical, bodily pain, general health, role emotional, vitality, mental health and social function). This finding is in line with the works of Aspinwall, Hill and Leaf (2002), Beygi (2012) and Saleh Moghadam et al (2014). It could be concluded that NA with the aid of extensive social support and desirable interpersonal relationships, invites the members to exchange experience and provides them with similar models. Individuals under treatment in this

community would be able to find new confrontational methods to deal with their problems and have better hope of certain cure while comparing themselves to the similar models (Moos & Moos, 2004). Moreover, the interpersonal relationships in NA, in addition to providing social support and modeling for finding confrontational strategies, make an informational process through which individuals become aware of the desirable and successful strategies of others in the treatment period. This leads to increased self-confidence and could result in stronger sense of competence in facing the fear of upcoming problems or probable failure. As a result, individuals who enjoy participating in this group, with more self-confidence and competence, would be able to put up with the hard conditions of treatment period and have more persistence to go through the process (Kelly, Stout & Slaymaker, 2013). The effect of people's hope of success and the sense of capability is so powerful that those under treatment have been empowered to face the physical pain emerging from withdrawal and consequently, in comparison with MMT patients, gained a higher ability to resist against the physical pain. This, in turn, leads to their better sense of their physical function and, on top of that, to stronger feelings of vitality. Therefore, according to supporters of this method (e.g. Kelly & Urbanoski, 2012, Moos, 2007), it can be concluded that participation in NA group, as it builds the social context based on sympathy and common understanding and the increase in individuals' interaction with similar conditions, is an important factor in establishing accountability for their treatment, and their endurance for continuity of treatment.

Concerning the other variables under investigation, psychological disorders, participating in self-help NA group contributed to a significant difference with the MMT group, in a way that, the means of NA group members in any of three indices of psychological disorders (depression, anxiety and stress) were in better status than the MMT group. This finding indicates that participation in the NA group has provided a better condition for dealing with the side effects of treatment period such as physical pain and role emotional. This has been verified by the lower means of all three indices of psychological disorders (depression, anxiety and stress) in NA group. Peles et al. (2006) Carpentier et al. (2009) have also reported cases of temperamental and emotional disorders in majority of MMT patients. On this account, it appears that the principal feature of the NA is providing social support and patients' help for each other which cause people to exchange experience, while benefiting from similar people's sympathy in discussion circles, and get access to the desirable strategies for tackling mental stress which is accompanied by physical side effects of treatment period. Therefore, in an effort to break dependency on the substance and with the hope of achieving success similar to the existing models, people in NA take responsibility for their treatment and would not need a substitute substance. Along with Moos (2007), it has been confirmed that participating in discussion circles and involvement in the twelve-step process in the NA is accompanied by

vitality resulting from social support, results in better feelings about the self, and leads to more self-esteem, self-control and consequently increased capability for endurance and persistence in the treatment process. For this reason, the members of this group, in comparison with the MMT group fight and overcome their depression, anxiety and stress with more potential. The stronger effect of NA method than MMT on life quality has also been confirmed with other findings of the study about the duration of membership in NA group. On the one hand, the results show a negative correlation between duration of membership and the depression and physical pain, and on the other hand, longer duration of membership correlated with more positively general health and emotional consequences. In other words, an increase in duration of membership in NA is accompanied by less depression and physical pain and better general health and more positive role emotional. Therefore, it seems that out of two common methods of addiction treatment, i.e. therapeutic community of NA and MMT, the therapeutic community has more potential in enhancing life quality and reducing psychological disorders, and could be heeded as a desirable method of treatment. All in all, it is suggested that, to face addiction, the educational-pedagogical strategy is trusted and by social support and, sympathy and exchanging experiences laying in the method of therapeutic community of NA, it tries to involve the sufferers responsibly in the process of breaking addiction and returning to a healthy life. However, it is given that the therapeutic community has not been the best method of certain treatment for all who suffer, and in choosing the treatment strategy all the patient's individual characteristics, life conditions and constraints and his preferential method should be taken into account.

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## Abstract

**Objective:** Given that drug addiction is not merely related to a specific individual or group and few studies have investigated the role of anger in the development of drug addiction, this study was done to investigate the role of the components of anger in predicting addiction potential.

**Method:** A descriptive-correlation research design was used for the conduct of this study. To this end, the number of 309 medical students in Kermanshah city was selected using stratified cluster sampling; and completed Spielberger's State-Trait Anger Scale (STAS) and Zargar's Addiction Potential Questionnaire.

**Results:** The results showed that state anger, trait anger, anger expression-out (AXO), anger expression-in (AXI), the overall index for the expression of anger were significantly associated with addiction potential. Similarly, anger control-out (ACO), anger control-in (ACI) were correlated with addiction potential. In addition, the regression analysis results indicated that state anger and anger expression-in (AXI) together can predict 35% of changes related to addiction potential. **Conclusion:** State anger and anger expression-in (AXI) as subjective components of anger have a significant role in predicting addiction potential among medical students. Anger management programs for medical students, as the most important segment of the society in the field of public health, are recommended to assign more credit to these two components.

**Keywords:** Anger, State Anger, Anger Expression-In (AXI), Addiction Potential, Medical Students

# The Investigation of Drug Addiction Potential among Medical Students: Role of Subjective Components of Anger

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## Introduction

Addiction is considered as one of the quadruple crises of the twenty-first century and as one of the major health, psychological, and social problems, as well as the main cause of high-risk behaviors (Farnam, 2013; cited in Soheili, Dehshiri & Mousavi, 2015). It is noteworthy that addiction has involved 2.5 percent of students due to various psychological and social problems (Bahadori Khosroshahi & Khanjani, 2003; Sarraimi, 2012, cited in Soheili, Dehshiri & Mousavi, 2015). According to the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (2014), American Psychiatric Association defines substance use disorder as a set of cognitive, behavioral, and physiological symptoms that show the person continues drug use despite significant problems associated with drugs. Drug dependence can be seen in all professions, educational levels, and socioeconomic classes and it is not as merely limited to an individual or a specific group (Mostafaei, Hosseini & Jenaabadi, 2014).

As per the estimates of the United Nations Office on Drugs and Crime, 3.4 percent of the world's population or 4.7 percent of the world's population over 15 years are suffering from substance abuse (Matinnejad, Mousavi & Shams Esfandabad, 2009). The history of phenomenon in Iran also goes back to a few hundred years ago (Yassini, Ardakani, Banaei-Boroujeni & Dastjerdi, 2013). To date, numerous studies have been carried out about the dangers of addiction, the factors effective in its incidence, and secondary prevention. Moreover, some theories have been raised in the primary prevention that examine risk factors in the emergence of addiction. Similarly, addiction potential theory states that some people, in case of the availability of the conditions, are prone to addiction while others are not (Gendreau & Gendreau, 1970). Newcomp & Richardson (2000) introduced social-cultural environment, biological factors, interpersonal factors, and psycho-behavioral factors as predictor variables of addiction. In the meantime, psycho-behavioral factors entail a wide range of variables, including anger and aggression. Anger is defined as a type of emotion that can be stimulated in different ways and may affect different aspects of physical and mental health. Study of this emotion raises awareness and perception of people's feelings and helps them more effectively recognize and overcome their emotions (Spielberger & Reheiser, 2009). According to Spielberger's view (1999; cited in Lapa, Aksoy, Certel, Özçelik & Çelik, 2013), anger experience can be categorized in two main components, namely state and trait anger. State anger is a psychobiological state that contains one's subjective feelings of turns, while trait anger is defined as an individual difference that emerges in a range of situations in case of failure. Based on the results of the studies done by Giancola (2000); Hoaken & Pihl (2000); and Sharma, Suman, Murthy & Marimuthu (2011), strong anger is generally associated with lower quality of life and incidence of risky behaviors, such as drug addiction and alcohol abuse. In drug users, the emergence of anger can be the consequence of various factors, such as

the toxic effects of drugs on the central nervous system, pathological changes in the brain, mental and behavioral disorders, and changes in the hierarchy of individual values (Ilyuk, Gromyco, Kiselev, Torban & Krupitsky, 2013). The studies done by Giancola et al. (2002); Hoaken & Stewart (2003); and Ilgen & Kleinberg (2011) consider anger as one of the consequences of addiction. Previous studies have addressed the role of anger in the incidence of addiction in the general population and generally have focused on secondary prevention. This is so while it seems that the general population, especially the student population are at risk of addiction potential. Medical students will constitute the main elements of the medical staff of health centers in the near future. This population is considered one of the most important populations and, thereby, the incidence of long-term trauma, including addiction in this population can even endanger the health of a wide range of the general population. Hence, it is obvious that the identification of addictability risk factors in this group is of importance. Thus, the high rates of addiction prevalence and its associated health problems have made it inevitable to study risk factors in different groups, especially in students (Mostafaei, et al., 2014). Accordingly, the present study aimed to investigate the predictive role of anger components in addiction potential.

## **Method**

### **Population, sample, and sampling method**

A descriptive-correlation research design was used for the conduct of this study. The statistical population of the study consisted of all the bachelor's students or medical students of Kermanshah University of Medical Sciences in the academic year 2014-15. This population consisted of 2500 female students and 1000 male students. Random cluster sampling was used for the selection of the participants. In this regard, the required proportion of each gender for inclusion in the sample was first calculated due to the heterogeneous distribution of male and female students. In other words, according to Cochran's sample size formula, 225 female and 95 male students (total of 320 participants) were selected as the sample. Then, depending on the sample size required of any gender, four faculties were selected out of the seven faculties and 16 classrooms were randomly selected across all academic disciplines and classrooms of the faculties. Among the selected participants, five female and five male students were excluded because of unwillingness to participate in the research and the questionnaires of the study were handed in to the other students. The researcher administered the questionnaires after providing the necessary explanations about how to answer the questions and providing the necessary guarantee of the confidentiality of the responses. It should be noted that the questionnaires in the study were given to the students and they were requested to carefully answer all the questions. Due to the distortion of one of the completed questionnaires, the

number of 309 questionnaires (220 questionnaires filled by female students and 89 questionnaires filled by male students) was finally analyzed. The criteria for the inclusion of the participants in the sample were as follows: aged from 18 to 35 years, no history of failure in higher education, and a desire to participate in the study. In addition, the delivery of flawed or incomplete questionnaires was the criterion for the exclusion of participants from the study. For the conduct of this study, the approval from the university ethics committee was also received.

### **Instrument**

1. Spielberger's State-Trait Anger Expression Inventory (STAXI-2): This questionnaire contains 57 items, which are placed in six scales, five subscales, and one anger expression index - overall index for the expression and control of anger. In the second version of the questionnaire that was used in this study, three scales of trait anger, anger expression-out, and anger expression-in have been left unchanged from the first version. This inventory has been made up of three parts, including state anger (questions 1-15: feelings of anger, a desire for verbal expression of anger, desire for physical expression of anger), trait anger (Questions 16-25: mood angry and angry reactions), and the incidence and control of anger (questions 26-57: anger expression-out, anger expression-in, anger control-out, anger control-in). Each of the statements of this questionnaire is graded using a four-point Likert scale. It is noteworthy that the statements of the first part of the test are graded using one of the four alternatives, not at all, somewhat, moderately so, and very much so. However, the statements of the second and third parts are responded using these alternatives: almost never, sometimes, often, and almost always. It takes participants 12 to 15 minutes to complete the questionnaire. Khodayarifard, Spielberger, Lavasani & Zardkhaneh (2013) calculated the reliability and validity of this questionnaire in Iran and reported Cronbach's alpha coefficients between .60 and .93 for all the subscales. In addition, test-retest reliability of the questionnaire was obtained within the range of .58 to .93. Content validity of the scale was assessed against the subscales of NEO-Five Personality Factor test and was reported between .48 and .68, which is suitable.

2. Addiction Potential Questionnaire: This scale was constructed by Weed & Butcher in 1992. Iranian version of the scale was constructed by Zargar, Najarian & Na'ami (2008) with respect to the psychosocial status of Iranian society. Active addictability and passive addictability constitute the factors of this scale. It contains 41 items, among which five items are lie detector. Each question is scored on a continuum from zero (strongly disagree) to three (totally agree). Construct validity (correlation coefficient of .45 with scale SCL-25) and the criterion validity of the scale have been reported appropriate. Cronbach's alpha coefficient of the questionnaire was also obtained equal to .90 (Zargar et al., 2008).

## Results

The mean and standard deviation pertaining to the age of the sample group were 20.7 and 2.60 years, respectively.

**Table 1. Descriptive statistics of the variables and correlation coefficients of anger components with addiction potential**

<i>Variable</i>	<i>Mean</i>	<i>SD</i>	<i>Addiction Potential</i>	
			<i>r</i>	<i>Sig.</i>
<b>State Anger</b>	22.88	6.93	.569	.0005
<b>Trait Anger</b>	20.49	5.63	.383	.0005
<b>Anger expression-out</b>	14.68	3.42	.368	.0005
<b>Anger expression-in</b>	16.33	3.33	.317	.0005
<b>Anger control-out</b>	22.15	4.47	-.149	.005
<b>Anger control-in</b>	22.40	5.24	-.175	.001
<b>Overall index for the expression of anger</b>	34.47	11.44	.340	.0005
<b>Addiction Potential</b>	10.09	8.45	1	-

As it can be observed in the above table, state anger, trait anger, anger expression-out, anger expression-in, and overall index for the expression of anger are positively correlated with addiction potential. On the other hand, anger control-out and anger control-in are negatively associated with addiction potential. Stepwise regression analysis was used to predict the addiction potential based on anger components. The results of this analysis are presented in Table 2. In the first step, state anger entered the equation and, then, anger expression-in was added to it in the second step, which totally accounted for 35% of the variance in addiction potential. Regression coefficients of the final step are presented in the table below.

**Table 2: Regression coefficients of addiction potential based on anger components in the final step**

<i>Predictors</i>	<i>B</i>	<i><math>\beta</math></i>	<i>t</i>	<i>Sig.</i>
<b>State anger</b>	.70	.57	11.98	.0005
<b>Anger expression-in</b>	.39	.15	3.07	.002

## Discussion and Conclusion

The present study was done with the aim of examining the predictive role of the components of anger in addiction potential. The results showed the existence of a significant relationship between all components of anger and addiction potential. This finding is consistent with those of the studies done by Mostafaei et al. (2014) and Hajihasani, Shafiabadi, Pirsaghi & Kianpour (2012). According to the findings of the studies done by Giancola (2000), Hoaken & Pihl (2000), Ilgen & Kleinberg (2011), Sharma et al. (2011), Ilyuk et al. (2013), Stewart, Levin-Silton, Sass, Heller & Miller (2008), and Kelly, Stout, Tonigan, Magill & Pagano (2010), anger as one of the negative emotion components is correlated

with school dropout, delinquency and criminal behavior, psychopathology, public health problems, and a wide range of psychiatric disorders. On the other hand, addiction and addiction potential are also significantly associated with psychiatric disorders (Quinn, Rollock & Vrana, 2014). High degree of anger can be associated with perceived social support and weaker self-concept (Quinn et al., 2014), suicide attempts (Daniel, Goldston, Erkanli, Franklin & Mayfield, 2009), and substance abuse (Cecen, 2006). Park et al (2013) argue that anger is more common in people with lower socio-economic status because they are more likely to experience failure during their lifetime. This failure may result in many unpleasant consequences such as anger and violence, delinquency, and homicide (Cecen, 2006). Such anti-social behaviors, which include a wide range, can underlie the emergence of drug addiction in any population. People with these characteristics are generally weak in metacognition and this component also has a significant impact on addiction potential (Hajloo, Sadeghi, Babayi Nadinloei & Habibi, 2014).

The results also showed that state anger and anger expression-in could be effective dramatically in anticipation of addiction potential. State anger is a psychological state that encompasses a person's subjective feelings (Lapa et al., 2013) and anger expression-in refers to the suppression of anger expression and inner feelings. According to Gray's theory, behavioral inhibition system, which is responsible for restrained behavior in response to threat and punishment (negative affect), affects one's sensitivity to punishment and causes the person to be sensitive to the potential punishment and avoid it (Erdle & Rushton, 2010). Similarly, anger as a negative emotion can occasion unfortunate social consequences. In such situations, the presence of state anger or anger expression-in in the form of behavioral inhibition system can solve this problem. This situation well explains why only these two components can predict addiction potential among all the components. Another issue is how state anger and anger expression-in can predict addiction potential. As Spielberger asserts, both of these are regarded as subjective components of anger (Lapa et al., 2013). Anger expression-in is strongly influenced by social norms such that the category of social norms that disappoints one from the full expression of anger can dramatically affect the situational expression of anger. Consequently, this situation and actual inhibition of anger facilitate the emergence or the aggravation of physical disorders (Brosschot & Thayer, 1998). Burns, Quartana & Bruehl (2011) argue that those people with high levels of anger who have to somehow suppress and prevent thoughts and emotions associated with their anger may show more vulnerability against future detrimental stimulations. This vulnerability and tendency to develop the disease can receive physical and mental aspect. In the meantime, the availability of drug addiction potential and emergence of addiction actually seem probable.

One of the limitations of this study was the age of the sample since the first-year students were selected as the sample, but students in higher years were not

selected. It is recommended that all medical students be evaluated in future studies. In addition, in this study, samples were taken only from medical students; therefore, the generalization of the results to other non-medical students should be made with caution. Hence, it is recommended that some studies be conducted in the field of anger management skills training on medical students as the most important segment of society in the field of public health.

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## Abstract

**Objective:** The aim of this study was to investigate the defense mechanisms and styles in substance users and abusers' families. **Method:** A descriptive research design was used for the purpose of the study. The sample consisted of 280 participants (70 persons in each group) from substance abusers' families, alcohol users' families, sedative users' families, and cigarette smokers' families who were selected by convenience sampling. For this purpose, Andrews' Defense Style Questionnaire (DSQ) was used to measure defensive mechanisms. **Results:** The highest average and percentage of immature mechanisms was found in drug users and alcohol users' families while the lowest percentage was found in sedative users' families. From among the immature mechanisms, denial was most frequently used by alcohol users' families while transition was least frequently used by substance abusers' families. **Conclusion:** Defense mechanisms change one's understanding of the self; therefore, immature defense mechanisms deter understanding reality, deprive one of the possibility of rational and effective defense, and reduce one's insight capacity and self-discovery.

**Keywords:** Defense Mechanisms, Defensive Styles, Drugs

# Defense Mechanisms in Substance Abusers' Families

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## Introduction

Social pathologies are diverse, relative, and variable phenomena. Aggression, crime, suicide, divorce, drug addiction, and prostitution are examples of social pathologies whose quantity and quality change based on time and space. Addiction phenomenon is one of the social pathologies, which is an underlying issue in relation with physical and mental health (Vaillant, 1994).

Addiction brings about biological, psychological, and social consequences. It is possible to regard addiction as a refuge, into which a failed person enters to protect him/herself from shortages, insecurity, and mental disorders. Addiction is a condition in which a person both physically and psychologically becomes dependent on a substance, comes with a strong need for the persistence in the use of that substance and is not able to stop using it voluntarily and willingly and, thereby, his/her tolerance decreases by the gradual consumption of that substance (Hashemi, Mohamadzadgan, Ghasem Baklou, Irani & Vakili, 2014). Addiction is a multi-dimensional behavior and different social, psychological, and biological components are involved in it. Family can be one of the factors contributing to the phenomenon of addiction (Ganji, 2013). When families are dealing with one of the relatives suffering from drug abuse, they experience significant pressure and may react to the issue by behaviors, such as responsibility acceptance, adoption of paternal approach, complete disconnection of the communications with the drug abuser, and withdrawal from the issue (Roskam, Zech & Nils, 2008). Substance abuse in a family member is a sign of inefficiency of interactions and dynamics of the family. This behavior is influenced by the permanent inefficiency of family dynamics (Zamani, Habibi asgar abad, Zamani, Jamshidnejad & Monajjemi, 2015). In these circumstances, the family as a unit adopts coping strategies and interactions and complex defense mechanisms to regain stability and balance, which may contribute to the chronicity of abuse. Awareness of these processes and interactions is of considerable importance in understanding the nature of the problem of drug abuse by family members (Sartorius, et al., 2008). In such a situation, assessment of the interactions between the drug user and other family members leads to the understanding of the role of inefficient family dynamics in etiology, the type of drug use, and its progression (Zamani et al., 2015).

Other factors affecting addiction can be named as impact of friends and peers is another factor (Sadok and Sadok, 2005), impact of the mass media (Ganji, 2013), and psychological variables. In fact, psychological variables are of special significance since psychologists believe that the effects of biological and social factors should be viewed through the lens of psychological needs (American psychiatric Association, 2013). Among the psychological factors associated with drug use, it is possible to refer to the defense mechanisms that unconsciously impress people's behavior. Defense mechanisms are the automatic regulating processes that are active to reduce cognitive dissonance and

to minimize sudden changes in internal and external reality through influencing the way threatening events are perceived (Vaillant, 2014). In addition, defense mechanisms are a way to compromise with unpleasant events and conflicts in this area so that the individuals will not be defeated. The methods used to reach compromise are called defense (Fist & Fist, 2012; Holmens & Bowlby, 1994). Although defense mechanisms are normal and are used by all the people, they may lead to obsessive behavior and neurosis if used excessively (Fist & Fist, 2012). Freud believed that personal defense style and the frequency of using defense mechanisms are the main variables for the recognition of personality, pathology, and the amount of adjustment (cited in Jamilian, Zamani, Darvishi & Khansari, 2013). In psychoanalysis system, defense plays an important role in mental health and each mental disorder is followed by specific maladaptive defense mechanisms (Bond & Perry, 2004). The studies conducted in this area suggest that immature defense mechanisms are effective in the field of drug addiction, substance abuse, and relapse because maladaptive mechanisms and styles are associated with many negative health indicators (Bagheri, Azadfallah & Fathi-Ashtiani, 2013; Akbari Zardkhaneh, Rostami & Zare'an 2008; Mahdi, Fahimi & Bayrami 2013; Abd Halim & Farhana, 2013; Abd Halim & Farhana, 2012; Torkaman et al., 2014; Ghamari, Rostami, Nader & Ilbeigi Ghale'ni, 2010; Zamani, Ahmadi, Moghanloo & Mirshekari, 2014).

In general, the defense mechanisms play an important role in tendency to drug use. Since the role of family defense mechanisms in drug addiction has not been studied and also considering the importance of defense mechanisms in recognizing the individuals at risk of drug use, the present study aimed to examine defense mechanisms and styles in the families of substance users, cigarettes and alcohol abusers, and sedative hypnotic drug users.

## **Method**

### **Population, sample, and sampling method**

The present study was a descriptive one with the aim of clarifying the relationship between phenomena and adding to the body of knowledge in the field of defense mechanisms. The statistical population of the study consisted of the individuals who met the diagnostic criteria for addiction disorders (narcotic opiates and opium, cigarettes, alcohol, and drugs) in Hamadan Province in 2014 and first half of 2015 according to the fifth edition of Diagnostic and Statistical Manual of Mental Disorders Psychiatric Association. Moreover, the families of these individuals were also included in the statistical population. The sample consisted of four comparison groups with the number of 280 people (70 persons in each group) from patients' family members. According to the observation of research ethics, convenience sampling method was used to select the participants from among the people accompanying the patients with addictive disorders in addiction treatment centers and private clinics of medical doctors and

psychiatrists. In this way, eligible persons were chosen as the sampling participants in case of agreement. Patients with such disorders as bipolar disorder, borderline personality disorder, and adjustment disorders were excluded. In addition, such variables as age and gender were controlled. The criteria for the inclusion of the participants in the sample were as follows: 1. Those accompanying patients (father, mother and wife) when referring to the centers, 2. No recent bereavement in the family. Ethical considerations included: 1. The use of convenience sampling method, 2. Participation in the study was optional for the participants. 3. The required information on the implementation of the project was provided. 4. The information obtained from the participants remained confidential.

### **Instrument**

Andrews, Singh & Bond's Defense Style Questionnaire (DSQ): Defensive Style Questionnaire Andrews, Singh and Bond (1993): This questionnaire measures defensive behavior via experimental evaluation of conscious derivations of defense mechanisms in everyday life. It has been constructed based on the hierarchical model of defenses and contains 88 items and examines 24 mechanisms. Bond & Perry (2004) identified four defensive styles in the level of defense mechanisms using factor analysis: 1) Maladaptive style, 2) Image-distorting style, 3) Self-sacrifice style, and 4) Adaptive style. Mature defense mechanisms include sublimation, anticipation, humor and suppression; immature defense mechanisms include rationalization, projection, denial, dissociation, devaluation, acting-out, somatization, autistic fantasy, splitting, passive aggression, displacement, and isolation; neurotic defense mechanisms include undoing pseudo-altruism, reaction formation, rationalization, and cancellation (San martini, Roma, Sarti, Lingiardi & Bond, 2004). They also examined the relationship between defense styles and four groups of mental disorders in normal subjects. Results were not satisfactory in separating research groups from each other and separating the normal subjects and patients based on defensive styles. Therefore, researchers revised Defensive Style Questionnaire and developed the 40-item Defensive Style Questionnaire consistent with the classification of the diagnostic evaluation based on Diagnostic and Statistical Manual of Mental Disorders, Third Edition. The newly developed questionnaire evaluates 20 defense mechanisms in three levels. For the Persian version of the questionnaire, Cronbach's alpha coefficients of .75, .73, and .74 were obtained for mature, immature, and neurotic defense styles on a student sample, respectively. These values were obtained .74, .74, and .72 for male students and .75, .74, and .74 for female students, respectively (cited in Besharat, 2007).

### **Results**

The descriptive statistics of demographic variables are presented in the following table for each group.

**Table 1: Descriptive statistics of demographic variables for each group**

<i>Group</i>		<i>Cigarette users and abusers' family members</i>		<i>Alcohol users and abusers' family members</i>		<i>Sedative abusers' family members</i>		<i>Drug abusers' family members</i>		<i>Chi square comparison</i>	
		<i>f</i>	<i>%</i>	<i>f</i>	<i>%</i>	<i>f</i>	<i>%</i>	<i>f</i>	<i>%</i>	<i>Chi square</i>	<i>Sig.</i>
<b>Relation with patients</b>	<b>Father</b>	17	24.29	9	12.86	8	11.43	5	7.14	3.94	.742
	<b>Mother</b>	8	11.43	11	15.71	21	30	2	2.85		
	<b>Wife</b>	42	60	47	67.15	12	17.15	59	84.29		
	<b>Husband</b>	3	4.28	3	4.28	29	41.42	4	5.72		
<b>Education</b>	<b>Illiterate</b>	48	68.57	27	38.57	41	58.57	37	52.85	2.642	.624
	<b>Below high school diploma</b>	14	20	31	44.28	18	25.71	16	22.86		
	<b>Above high school diploma</b>	8	11.43	12	17.15	11	15.71	17	24.29		

As it was observed, the groups were matched in terms of education and relation to the patient. Mean and standard deviation pertaining to the age were respectively 29.10 and 5.92 years (of cigarette use and abuse), 32.07 and 7.43 years (alcohol use and abuse), 26.64 and 6.07 years (sedative abuse), and 24.61 and 5.27 years (drug abuse). The results of analysis of variance indicated no significant difference between the groups ( $P > .05$ ,  $F = .42$ ).

The results of analysis of variance representative of mean scores in defense mechanisms are presented in the table 3 considering the four groups.

ANOVA and Tukey's test results indicated that the family members of cigarette users and abusers use more of immature defense mechanisms than mature and neurotic styles. In this regard, autistic fantasy and devaluation have taken up the most and least frequently used mechanisms, respectively.

The percentage of using mature defense mechanisms is extremely low compared to the other two mechanisms in such a way that the highest and lowest usage percentages belong to humor and sublimation, respectively. In neurotic mechanism, reaction formation and rationalization mechanisms are of the lowest usage. Similar to cigarette abusers' family members, alcohol users and abusers' family members largely use immature mechanisms. These individuals use most frequently denial mechanism and use least frequently acting-out mechanism.

The highest and lowest percentages were found in anticipation and suppression mechanisms, respectively. In the case of neurotic mechanisms, reaction formation and undoing held the lowest and highest usage. Sedative users' family members use a high proportion of immature mechanisms. These individuals mostly used the defense mechanism of denial and made the least use of passive aggression. The highest and lowest percentages of mature mechanisms were found in anticipation and sublimation. In the case of neurotic mechanisms, rationalization and undoing pseudo-altruism contain the highest and the lowest usage. In mature defense mechanisms, rationalization and undoing pseudo-altruism had the highest and lowest percentage. Drug users and

abusers' family members made the minimal use of somatization and the maximal use of rationalization within immature defense mechanisms. In terms of mature mechanisms, anticipation and suppression were the highest and lowest frequently used mechanisms. In the same way, in neurotic mechanism, reaction formation mechanism and undoing pseudo-altruism received the highest and the lowest score.

**Table 3: ANOVA results representative of mean scores in defense mechanisms for comparison groups**

Variable Defense		Cigarette users and abusers' family members		Alcohol users and abusers' family members		Sedative abusers' family members		Drug abusers' family members		Total	
		M	SD	M	SD	M	SD	M	SD	F	Sig.
Immature defense mechanisms	Rationalization	7.7	1.2	8.0	1.3	8.3	.9	9.7	1.3	.483	.378
	Projection	9.1	2.2	6.4	1.9	8.6	1.6	7.3	2.4	.654	.579
	Denial	8.8	1.1	9.9	2.3	9.7	2.4	6.4	2.2	2.857	.136
	Dissociation	6.5	2.3	7.2	1.0	8.9	3.2	8.9	2.4	3.198	.094
	Devaluation	4.6	2.5	7.9	1.1	6.9	2.5	5.9	1.2	.957	.0001
	Acting-out	5.9	1.0	5.5	2.5	7.4	2.4	3.6	1.9	1.739	.079
	Somatization	8.4	2.6	6.1	1.7	5.9	1.0	4.2	2.6	5.918	.943
	Autistic fantasy	9.7	2.5	6.5	1.5	7.9	2.5	7.9	1.6	3.713	.089
	Splitting	6.4	1.6	9/Λ	2.6	8.6	.3	5.6	2.9	1.971	.0001
	Passive Aggression	9.7	1.2	9.1	2.0	5.6	1.7	8.4	1.4	.167	.074
	Displacement	5.5	2.9	5.4	1.6	6.4	1.9	7.8	2.2	1.094	.0001
	Isolation	6.7	1.6	6.6	2.9	7.6	1.3	5.6	1.4	4.954	.656
Mature	Total score of immature	7.8	.9	6.9	1.4	5.9	.7	6.9	.5	5.413	.0001
	Suppression	3.6	1.0	3.3	1.2	3.6	1.5	3.6	1.2	2.981	.034
	Sublimation	1.4	2.0	3.6	1.1	2.3	1.3	4.4	1.2	2.210	.143
	Humor	4.0	1.0	4	1	4.6	.3	4.5	1.1	1.164	.067
	Anticipation	3.7	1.2	4.6	1.1	5.4	1.2	5.4	1.0	3.068	.429
Neurotic mechanisms	Total score of mature	3.4	.3	3.7	1.3	4.8	1.4	4.6	1.2	1.004	.512
	Undoing Pseudo-Altruism	7.4	2.5	6.8	1.6	4.7	2.3	6.8	2.6	2.471	.246
	Reaction Formation	8.5	2.6	9.7	3.0	7.6	2.6	9.6	3.6	1.946	.456
	Rationalization	5.9	3.5	7.6	2.4	8.3	1.3	8.7	1.5	4.240	.649
	Cancellation	7.6	2.6	6.4	1.4	7.6	2.4	8.6	2.3	3.689	.563
	Total score of neurotic	6.7	3.9	8.6	3.2	7.7	2.6	6.3	.9	6.165	.068

## Discussion and Conclusion

This study was an attempt to investigate defense mechanisms and styles in cigarette users and abusers, alcohol users and abusers, hypnotic sedative users and abusers, and drug users and abusers' families. The results showed that the individuals' families use more immature defense styles.

Most of the studies in this area have focused on comparing addicts and healthy subjects and no research similar to the current study was found. Thus, there was not the possibility making accurate comparisons. However, the findings of the current study are roughly consistent with the research findings obtained by Bagheri et al. (2013); Zardkhaneh Akbari et al. (2008); Mahdi, et al (2013); Abd Halim & Farhana (2013); Abd Halim & Farhana (2012); Torkaman et al. (2014), and Ghamari et al. (2010). These researchers concluded that immature defense mechanisms are effective in tendency to drug addiction, substance abuse, and relapse. Ahmadi, Najafi, Hosseini Almadani & Ashuri (2012) compared defense styles and personality traits between addicts and non-addicts and showed that the addicts obtained higher scores than the normal group in terms of immature and neurotic defense styles, personality traits of neuroticism and extraversion. To justify the findings of this research, one can argue that defense mechanisms are the automated psychological processes that protect people against anxiety and make people aware of psychological pressures and internal and external threats. People who extremely use immature defense styles for coping with stress and emotional conflicts in life usually have lower mental health (Mahdi, et al., 2013). Mental disorders not only lead to the inefficiency of mental patients, but also severely affect their families and performance. This influence is observable in various aspects of mental health and social and economic performance, reduces well-being of families in total, and imposes a huge pressure on them. Hence, it can be claimed that mental disorders and a lack of mental health are deemed among the main concerns of the families with addicted members (Zamani et al., 2015). Here, the other family members undergo major objective and subjective stress. The amount of such stress depends on the type of relationship between members, such as spouses, children, or parents; age; gender; quality of the relationship with the patient before illness; and the coping strategies they use. Since defense mechanisms change self-knowledge, immature defense mechanisms become a barrier to understanding reality, wane the possibility of rational and effective defense, and reduce the capacity of insight and individual exploration. In addition, people with immature defense styles are more willing to employ inefficient solutions to resolve their conflicts. It can cause them to remain in difficult relationships and can even exacerbate the severity of injury. That addicts' families do not encounter such problems may be one of the reasons for the excessive use of immature defense mechanisms in such families (Vaillant, 1999; Nickel & Egle, 2006; Sartorius et al., 2008). Defense mechanisms, in fact, distort the realities of people's lives and the amount of this distortion is higher in immature and neurotic defense styles than in mature defense styles. Since such defenses distort unpleasant realities, it becomes to some extent easy for these individuals to tolerate and cope with the conditions. Therefore, it is possible that the families with addicted members use immature mechanisms to cope with the situation (Brad, 2004). Defenses such as denial, compensation, reaction formation, and rationalization used by families with

addicted members not only leave the problem unsolved in the families but they occasion mental fatigue through the increase of defensive stress. These people try to negate the available situation by resorting to the denial mechanism and try to justify their wrong actions and behaviors through the use of rationalization mechanism. Therefore, a vicious circle is created, which leads to the stabilization of these defenses. In fact, these individuals try to reduce the harmful effects of their problems even temporarily since they are not able to solve the problems. As a result, they become more and more inclined to inefficient mechanisms (Rinn, Desai, Rosenblatt & Gastfriend, 2002; Bokhan et al., 2013). Furthermore, these defense mechanisms are among the most important elements of personality that allow people to cope with the vicissitudes of their lives. However, the main issue is that people with addiction and their families are not able to properly use defense mechanisms in stressful situations and, thereby, they move towards malicious acts and behaviors (Torkaman et al., 2014; Gijssbers, 2008). In general, it can be stated that defense mechanisms are the psychological techniques that people use to protect themselves from fully experiencing the bad situation, to deal with reality, to maintain their own image, and to reduce emotional-affective psychological distress. These mechanisms are used primarily to reduce turbulence so that people can be protected from harm; however, the excessive use of these mechanisms is not recommended since they gradually lose their benefits and become some part of inefficient behavioral pattern. The use of these defense mechanisms in the families of addicted individuals wanes the feeling of guilt and distress in these people, which is considered another reason for the use of these mechanisms by these patients (Abd Halim & Farhana, 2012). Thus, it is essential to consider psychological factors influencing this phenomenon, such as defense mechanisms of addicts and their families due to the effects and consequences that the phenomenon of addiction imposes on the family and society and with regard to the importance of the role of psychological factors. The sample of this study was limited to Hamadan Province; therefore, the generalizability of the results to other communities should be taken with caution. More research should be conducted in this regard since the psychological state of the families with addicted members is less studied. It is also recommended that other factors affecting this ruinous phenomenon be studied in other research projects.

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## Abstract

**Objective:** This study was an attempt to investigate the role of early maladaptive schemas and attachment styles in changeability of opium addicts. **Method:** The research method was descriptive-correlation and the number of 162 male opium addicts was selected via convenience sampling. For data collection purposes, Young's Early Maladaptive Schemas, Collins and Read's Adult Attachment Scale, and Rhode Island's Changeability Scale were used. **Results:** The results showed that 38.1% of the changeability variance is predicted by secure attachment, avoidant attachment, and early maladaptive schemas. In the same way, avoidant and ambivalent attachment styles were positively associated with early maladaptive schemas. **Conclusion:** Due to the effect of early maladaptive schemas and insecure attachment styles on the incidence of maladaptive behavior, changeability of opium addicts can be expected to increase through the modification of dysfunctional thoughts and systemic relations.

**Keywords:** Early Maladaptive Schemas, Attachment, Changeability, Opium Addiction

# On the Prediction of Opium Addicts' Changeability through Early Maladaptive Schemas and Attachment Styles

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## Introduction

Drug abuse and drug addiction are among the most important psychosocial problems, which can have harmful effects on the person, family, and culture. It is also a serious obstacle to human growth and development. At present, addiction has become a disaster for health and public health around the world (Velasquez, 2001). Since most of these patients do not regard themselves as patients, there is no motivation for treatment. Losing their natural character, some of these people will become prone to turning into the trap of addiction and, thereby, another problem is added to their problems via the establishment of psychophysical dependency (Kamil, 2003, cited in Asghari, 2009).

Therefore, attention to psychotherapeutic and psychological treatments can be effective in control of the consequences of drug use. Treatment of physiological dependence without considering psychological dependence will usually result in addiction relapse and, thereby, the treatment will be quite incomplete. Psychological and personality problems of the addicts should be considered in the elimination of psychological dependence. Stages of Change Theory is one of the most famous attempts that explains the change process in people with psycho-behavioral problems, especially drug dependence. This theory has been proposed as some part of Group Trans-Theoretical Model by Prochaska and Di Clemente and focuses on the study of group trans-theoretical therapy in the field of drug abuse. Trans-Theoretical Model is an integrated framework of separate views for understanding the troubled behaviors. In this model, the following views have been used: Bandura (1986); Bergin & Garfield (1994); Freud (1949); Rogers (1954); Skinner (1953) (cited in Asghari, 2009). This model provides a theoretical framework for recognition, measurement, and intervention towards behavioral change. This change model emphasizes the stages of change during treatment station. These stages include: 1. pre-contemplation stage, 2. contemplation stage, 3. preparation stage 4. action stage, 5. maintenance stage (Velasquez, 2001). According to the cognitive theory, change in the way of thinking can lead to the change in the type of feelings and behavior. Negative thoughts and irrational beliefs can be also seen in addicts. Escape from problems, exaggeration of negative events, negative view towards the world and the future, and rejection of responsibility are associated with the transformation of addiction patterns (Rohsenow et al., 1989).

In this regard, schemas are important in cognitive approach. Schema arise in the early stages of children's lives as a result of negative experiences with parents and peers and it is assumed that these schemas are a guide to many inefficient cognitions, feelings, and behaviors (Young, 2003; cited in Shorey, Stuart, Anderson, Strong & Shorey, 2012, Shorey, Stuart & Anderson, 2013). The importance of these schemes will be doubled since one's performance and progress in stages of change depend on his/her cognition and information processing. Therefore, early maladaptive schemas are much more resistant to

change compared to superficial levels of cognition. Accordingly, the idea of transferring these beliefs in the process of change is very difficult (Kirsch, 2009). Research findings have reported the existence of higher degrees of such schemas as separation and rejection, autonomy, malfunctioning, and directedness in drug-dependent subjects compared to the normal subjects (Rezaei, Hosseinzadeh, Dolatshahi, Masafi & Jafari, 2011). Kirsch (2009) found that there was a significant negative relationship between the total scores of maladaptive schemas and such characteristics as self-esteem, depression, and anxiety in the first five weeks of addiction therapy. In other words, higher scores in early maladaptive schemas were associated with lower self-esteem, more severe anxiety, and higher depression. This can affect one's progress in the other stages of change process. Therefore, content of each schema is shaped and organized through one's life experiences and will be used in the perception and evaluation of new information (Young, Klosko & Weishaar, translated by Hamidpour & Anduze, 2012). Family is very important in the formation of early maladaptive schemas. Studies have proved the relationship of substance use disorders with quality of family relations, heightened parental supportiveness, and socioeconomic status in families. In some studies, the role of the family as an important factor in substance abuse has been so highlighted that it is seen as an independent variable (Spath, et al., 2002; cited in by Di Pietro, 2007).

One of the most basic family factors that could affect many of the family problems is parent-child relationship. Many studies have confirmed higher levels of drug use in the families in which there is no intimate parent-children relationship and secure attachment (Nakamura - Tani, 2005; Hill, Hawkins, Catlano, Abbott & Guo, 2005). Attachment makes one enjoy interacting with certain people in life and feel relaxed in stressful times when working closely with such individuals. These early attachment experiences with caregivers direct the feelings, thoughts, and behavior in the next relationships (Berk, 2007; Translated by Sayed Mohamadi, 2012). Following Bowlby's studies (1971) on attachment, Ainsworth recognized three styles, namely secure, avoidant, and ambivalent attachment styles. On the other hand, the experience of insecurity is correlated with attachment relationships characterized by mistrust, vulnerability, sensitivity, and communication problems (Berk, 2007, translated by Sayed Mohamadi, 2012). Various studies have shown that attachment has a crucial role in the formation of personality models. In this framework, some researchers have placed emphasis on the importance of organizational actions in integrating the affective, motivational, cognitive, and behavioral components. In addition, research findings show that there is a relationship between attachment and psychopathology in childhood, adolescence, and adulthood. Results of a study showed that attachment style is significantly associated with mood disorders, anxiety, personality disorders, and substance abuse (Casidy & Shaver, 2008; cited in Roelofs, Onckrls & Muris, 2013). As a maladaptive coping strategy for emotional distress, substance abuse is represented in people with avoidant-

anxious attachment. It seems that anxiety is associated with perceived anxious attachment and distress and is described as a self-therapeutic method against emotional distress (Newcomb, 1995; cited in Schindler, Thomasius, Sack, Gemeinhadt & Kustner, 2007) and as efforts to cope with emotional instability and lack of control (Petraitis et al., 1998; cited in Schindler et al., 2007). In terms of attachment, substance abuse can be perceived as an artificial inactive strategy and as an attempt to deal with insecure attachments, to reduce emotional distress, and to adjust interpersonal relations. In particular, attachment patterns can be seen in connection with drug abuse; and insecure attachment may be found to be significantly associated with substance abuse (Schindler et al., 2007). Insecure attachment was considered a leading risk factor for more research in the past decade (Casidy & Shaver, 2008; quoted Roelofs et al., 2013).

Among insecure attachment styles, avoidant attachment holds a significant positive correlation with drug abuse (Anderson, 2012). From another perspective, insecure attachment has been known as a personal vulnerability factor (Anderson, 2012). This, in turn, provides some assumptions regarding the performance of drug-dependent individuals in the stages of change process. According to the research findings in this area, this study aimed to predict the changeability of people addicted to opium based on early maladaptive schemas and attachment styles.

## **Method**

### **Population, sample, and sampling method**

The research method is descriptive-correlation. All the male opium addicts who referred to the outpatient treatment centers of Qazvin City in the last 6 months constituted the statistical population of the study. From among this population, the number of 162 opium users was selected as the participants of the study via convenience sampling. All these participants were laid in the range of 20-40 years old and held at least middle school degrees.

### **Instrument**

1. University of Rhode Island Change Assessment: This scale was constructed by Di Clemente, Prochaska, Velicer & McConaughy in 1989 and contains 32 items and four subscales (pre-contemplation, contemplation, acting-out, and maintenance) (cited in Asghari, 2009). Reliability of this scale was obtained .68 using test-retest within a two-week interval (Asghari, 2009). In the present study, Cronbach's alpha and split-half reliability coefficients of the scale were obtained equal to .76 and .82, respectively.

2. Early Maladaptive Schema Questionnaire: This questionnaire was developed by Young (1990, cited in Sadoughi, Aguilar-Vafaie, Rasoulzadeh Tabatabaie & Esfahanian, 2008). This is a self-report questionnaire that measures eighteen early maladaptive schemas as follows: abandonment/

instability, mistrust/abuse, emotional deprivation, defectiveness/ shame, social isolation/ alienation, dependence/incompetence, vulnerability to harm or illness, enmeshment/undeveloped self, failure, entitlement/grandiosity, insufficient self-control/self-discipline, subjugation, self-sacrifice, approval-seeking/ recognition-seeking, negativity/ pessimism, emotional inhibition, unrelenting standards/ hypocriticalness, and punitiveness. The items are scored based a 6-point Likert scale. The reliability of the Young Schema Questionnaire with 75 items was reported to range from .94 to .96 (Sadoughi, et al., 2008; Ahi, Mohamadifar. & Besharat, 2007; Waller, Meyer & Hania, 2001). In the present study, the reliability of the scale was calculated and obtained equal to .88.

3. Collins and Read's Adult Attachment Scale: Collins and Read's Revised Adult Attachment Scale (1999, cited in Pakdaman) contains a self-assessment of communication skills and self-descriptive method of forming close attachment styles. This scale consists of 18 items that are scored based on a 5-point Likert scale. The conduct of factor analysis led to three subscales, namely dependence, closeness, and anxiety. Collins reported Cronbach's alpha coefficient in 2 samples of 173 and 100 college students respectively: .81 and .82 for closeness; .78 and .80 for dependence, and .85 and .83 for anxiety. The reliability of this questionnaire was calculated using Cronbach's alpha coefficient, which equaled .79.

## Results

**Table 1: The correlation matrix of the variables under study**

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1 Changeability	1																		
2 Secure	.10	1																	
3 Avoidant	.34**	.42**	1																
4 Ambivalent	.26**	.32**	.52**	1															
5 Emotional deprivation	.30**	.16*	.29**	.32**	1														
6 Abandonment	.34**	-.07	.09	.32**	.52**	1													
7 Mistrust	.20**	.04	.31**	.18*	.48**	.43**	1												
8 Social isolation	.26**	.15	.40**	.42**	.51**	.38**	.45**	1											
9 Defectiveness	.30**	.05	.29**	.35**	.47**	.41**	.49**	.75**	1										
10 Failure	.28**	.16*	.16*	.34**	.45**	.42**	.37**	.47**	.54**	1									
11 Dependence	.30**	.07	.42**	.47**	.39**	.52**	.50**	.50**	.58**	.60**	1								
12 Vulnerability To Harm	.26**	.14	.42**	.46**	.46**	.49**	.54**	.67**	.53**	.53**	.66**	1							
13 Undeveloped Self	.20*	.04	.26**	.30**	.33**	.46**	.50**	.42**	.45**	.36**	.58**	.52**	1						
14 Subjugation	.40**	.06	.37**	.38**	.46**	.54**	.46**	.70**	.67**	.59**	.71**	.74**	.62**	1					
15 Self-Sacrifice	.18*	.15	.24**	.04	.30**	.25**	.33**	.09	.17*	.19*	.21*	.22**	.34**	.14	1				
16 Emotional Inhibition	.20*	.08	.37**	.32**	.45**	.41**	.57**	.62**	.59**	.54**	.67**	.71**	.59**	.69**	.24**	1			
17 Unrelenting standards	.20*	.03	.33**	.18*	.31**	.45**	.59**	.38**	.24**	.30**	.45**	.51**	.50**	.47**	.48**	.62**	1		
18 Entitlement	.36**	.21**	.25**	.19*	.21**	.33**	.46**	.36**	.27**	.13	.40**	.36**	.52**	.43**	.32**	.34**	.43**	1	
19 Insufficient Self-Discipline	.31**	-.07	.23**	.27**	.26**	.46**	.36**	.46**	.51**	.53**	.61**	.55**	.42**	.74**	.16*	.44**	.38**	.36**	1
20 Total schemas	.40**	.09	.42**	.43**	.64**	.68**	.73**	.74**	.74**	.65**	.79**	.82**	.72**	.85**	.43**	.81**	.68**	.57**	.68**

\* P<.05; \*\*P<.01

The mean and standard deviation for the age of the sample group were 30.94 and 4.73, respectively. In terms of education, the number of 84 participants (51.9%) had degrees under diploma, 51 participants (31.5%) held diploma degrees, 27 participants (16.7%) had degrees above diploma. The correlation matrix of the variables under study is presented in the table 1.

As it is observed in the table1, there is a significant positive relationship between early maladaptive schemas (emotional deprivation, abandonment/instability, mistrust/ abuse, social isolation/ alienation, defectiveness/ shame, failure, dependence/ incompetence, vulnerability to harm, enmeshment/ undeveloped self, subjugation, self-sacrifice, emotional inhibition, unrelenting standards, entitlement, and insufficient self-discipline) and changeability. Similarly, there is a positive relationship between early maladaptive schemas (emotional privation and entitlement) and secure attachment styles; however, early maladaptive schema of failure and secure attachment styles were negatively correlated with each other. In addition, there is not any significant relationship between secure attachment styles and early maladaptive schema of abandonment/instability, mistrust/abuse, social isolation/alienation, defectiveness/ shame, dependence/ incompetence, vulnerability to harm, enmeshment/ undeveloped self, subjugation, self-sacrifice, emotional inhibition, unrelenting standards, and insufficient self-discipline. In the same way, there is a positive relationship between early maladaptive schemas (emotional deprivation, mistrust/abuse, social isolation/alienation, defectiveness/ shame, failure, dependence/incompetence, vulnerability to harm, undeveloped self, subjugation, self-sacrifice, emotional inhibition, unrelenting standards, entitlement, and insufficient self-discipline) and avoidant attachment styles, but no significant relationship was found between early maladaptive schema of abandonment/instability and avoidant attachment. There is also a positive relationship between early maladaptive schemas (emotional deprivation, abandonment/ instability, mistrust/abuse, social isolation/alienation, defectiveness/ shame, failure, dependence/incompetence, vulnerability to harm, enmeshment/ undeveloped self, subjugation, emotional inhibition, unrelenting standards, entitlement, and insufficient self-discipline) and ambivalent attachment styles, but no significant relationship was found between early maladaptive schema of self-sacrifice and ambivalent attachment styles. In the same way, there is a positive relationship between attachment styles (avoidant and ambivalent) and changeability while there is no significant relationship between secure attachment style and changeability. The results of stepwise multiple regression for the prediction of changeability are presented in the table below.



**Table 2: Regression coefficients of changeability based on maladaptive schemas and attachment styles in the last step**

<i>Variable</i>	<i>R<sup>2</sup></i>	<i>β</i>	<i>t</i>	<i>Sig.</i>	<i>Partial correlation</i>
<b>Secure attachment</b>		.162	2.46	.015	.162
<b>Avoidant attachment</b>		.140	2.12	.36	.140
<b>Emotional deprivation</b>		.140	2.13	.035	.140
<b>Abandonment/instability</b>		.288	1.38	.001	.288
<b>Mistrust/abuse</b>	.381	.242	3.67	.001	.242
<b>Failure</b>		.191	2.91	.004	.191
<b>Dependence/incompetence</b>		.258	3.92	.001	.258
<b>Entitlement</b>		.130	1.98	.050	.130
<b>Insufficient self-discipline</b>		.183	1.78	.006	.183

According to the results of partial correlation, when the common variance between predictor variables is considered, each of the variable alone account for some percentage of changeability as follows: 2.6% by secure attachment, 2% by avoidant attachment, 2% by emotional deprivation, 8.3% by abandonment/instability, 5.9% by mistrust/abuse, 3.6% by failure, 6.7% by dependence/incompetence, 1.7% by entitlement, and 3.3% by insufficient self-discipline.

### **Discussion and Conclusion**

This study aimed to examine the changeability prediction among opium addicts through early maladaptive schemas and attachment styles. Accordingly, the results of this study showed that there was a significant positive relationship between early maladaptive schemas (emotional deprivation, mistrust/abuse, social isolation/alienation, defectiveness/shame, failure, dependence/incompetence, vulnerability to harm, undeveloped self, subjugation, self-sacrifice, emotional inhibition, unrelenting standards, entitlement, and insufficient self-discipline) and avoidant attachment styles. Similarly, there was also a positive relationship between early maladaptive schemas (emotional deprivation, abandonment/instability, mistrust/abuse, social isolation/alienation, defectiveness/shame, failure, dependence/incompetence, vulnerability to harm, enmeshment/undeveloped self, subjugation, emotional inhibition, unrelenting standards, entitlement, and insufficient self-discipline) and ambivalent attachment styles. This finding is consistent with the research findings obtained by Andersen (2012), Dale, Power & Kane (2010), Ketabi, Maher & Borjali (2008), Torberg & Lyvers (2005), McNally, Palfai, Levine & More (2003), Petrocelli, Glaser, Calhoun & Campbell (2001), and Khoshlahjeh Sedgh, Abolma'ali Alhosseini, Khoshlahjeh, Alizadeh Farshbaf, Imani & Hosseini (2012). The obtained results may be explained by the claim that attachment is the emotional atmosphere dominant over the mother-child relationships, which is shaped as an emotional essence between the child and family system (Strivastava & Beer, 2005). Bowlby (1980) believed that babies extract their

own experiences with caregivers to create internal representations of attachment or internal activation patterns. These attachment representations shape expectations about the relations and future. On the other hand, schemes encompass assessment beliefs about the self and others. It has been stated that attachment representations can be conceptualized as cognitive schemas for the relationships that have been formed in response to childhood experiences with caregivers (cited in Wearden, Berry, Barrowclough & Liversidge, 2008). Young regards schemas as the result of children's mood evolution along with their inefficient experiences in the early years of life (Jill, Michiel & Vreeswijk, 2008). In fact, schemas are produced due to the suppression of the basic emotional needs, such as the need for security, expression and healthy emotions, self-spontaneity, fun, realistic limitations, and self-restraint in childhood (Skeen, 2007). People with early maladaptive schemas experience inappropriate affective relationships with their parents and caregivers in early childhood and suffer from high levels of abandonment, emotional deprivation, mistrust, and emotional inhibition. These people with avoidant and insecure attachment styles do not trust other people in close relationships and defective automatic schemas and cognition in adulthood directly influences the continuation of insecure attachment styles in such people. It seems that inefficient attachment styles are adopted via the child's early relationships with close relatives and lead to early maladaptive schemas. Another finding of the current study was that 38.1% of the variance of changeability variable was explained by secure attachment, avoidant attachment, early maladaptive schemas (emotional deprivation, abandonment/instability, mistrust/abuse, failure, dependence/incompetence, entitlement, and insufficient self-discipline). Accordingly, the results of research done by Roelofs, et al. (2013), Kirsch (2009), Schindler et al. (2007), Spath (2002; cited in Di Pietro, 2007), and Rezai et al. (2011) are in line with the result of the current research. According to Roelofs, et al. (2013), schemas can act as a mediator in the relationship between the attachment styles and behavior. Schemas can be the problematic and underlying factor of maladaptive behaviors. Accordingly, trans-theoretical model is a theoretical framework for understanding, measurement, and intervention towards behavioral change. In other words, this model refers to the stages of change during treatment process and, thereby, change in the way of thinking can change emotions and behavior according to cognitive theory.

According to the results of this study, it can be concluded that early maladaptive schemas and attachment styles have been created because of inefficient relationships and automatic thoughts and the suppression of emotional needs by families. Therefore, the increase of changeability in substance users can be expected via the modification of systemic relationships during the treatment, as well as schema therapy. The success in changeability is effective in non-use of substance, reduction of drug use craving, and efficacy enhancement in male substance users (Asghari, 2009). Substance abuse is an

inefficient mechanism to cope with emotional distress. Therefore, the experience of insecurity in parent-child relationships leads to the formation of irrational thoughts and consequent inefficient and insecure attachment styles. Accordingly, it can be expected to help parents deeply recognize the needs of children and establish intimate relationships with children by holding training courses for parents. In this way, secure attachment styles are developed in children. It is also possible to employ group schema therapy in rehab centers to increase the changeability in addicts.

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## Abstract

**Objective:** This study was aimed to assess the effectiveness of positive psychotherapy based on quality of life in improving opiate addicts' quality of life. **Method:** A quasi experimental research design along with control group and pre-test, post-test and follow-up was employed for the conduct of this study. All the opiate addicts referring to treatment centers of Ardebil City in 2013 constituted the statistical population of the study and the number of 36 participants was selected as the sample via purposive sampling and randomly assigned into experimental and control groups. Quality-of-life-based psychotherapy was conducted on the experimental group in 8 sessions while the control group received no intervention. Quality of Life Questionnaire was used for data collection purposes. **Results:** The results suggested the effectiveness of the intervention in quality of life. **Conclusion:** This intervention, which is formed from the combination of positive psychology and cognitive-behavioral approach, can be used as an effective treatment method.

**Keywords:** Psychotherapy Based on Quality of Life, Positive Psychology, Quality of Life, Opiate Addicts

# Effectiveness of Positive Psychotherapy in Improving Opiate Addicts' Quality of Life

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## Introduction

In addition to drug abstinence in addicts, the consequences of addiction treatment methods and addicts' quality of life are also important. Addiction is associated with physical and mental damages and threatens the people's health and security. Research findings show that substance abuse and opiate use are associated with low quality of life (Feelemyer, Jarlais, Arasteh, Phillips & Hagan, 2014; Karow, et al., 2011; Pournaghash, Habibi & Imani, 2012). During the past three decades, attention to quality of life, as an important factor in evaluating the outcomes and effectiveness of treatment in physical and psychological diseases, has increased (Karow et al., 2010). Traditional approaches to assess the outcomes of psychological treatments or their effectiveness mostly focus on the disorder symptoms; and quality of life and related concepts have received less attention. However, changes in the signs and symptoms of disorders do not necessarily lead to change in the individuals' recovery (Maremmanni, Pani, Pacini & Perugi, 2007). Quality of life is defined by several methods.

World Health Organization considers quality of life to be in relation to goals, expectations, standards, and affairs and also considers it as one's perception of life status in the field of culture and value system in which one lives (Katsching, 2006). Quality of life is a broad concept that is affected by a large number of factors, such as physical health, psychological state, and level of independence in relationships. Overall, quality of life contains different physical, mental, and social aspects that encompasses a wide range of one's life spectrum. In the area of addiction and substance abuse, researchers emphasize the need to a model that prevents serious outcomes and consequences of addiction. It is obvious that such a model should be multifaceted and entail physical, psychological, social, and environmental dimensions (Morales-Manrique, et al., 2007; Miller & Miller, 2009).

Since addiction is a multifactorial phenomenon, several rounds of treatment must be implemented so that an addict can gain complete recovery. There are two major categories, namely pharmacotherapy and psychotherapy in addiction treatment (Miller & Fapa, 2007). Although pharmacotherapy is considered one of the most common and effective approaches, it seems that this therapy alone is not sufficient and, thereby, the integration of other treatment methods, which focus on the patients' psychological dimensions and social and environmental relationships is required. Among the above-mentioned interventions, cognitive behavioral therapy is the preferred treatment for some of the mental disorders. This treatment enjoys some advantages, including time and energy economy, training of social skills, and improvement of interpersonal relationships. These advantages have led to the wide use of this treatment as the effective method for the treatment of drug dependent patients (Brink & Hassen, 2006).

Studies have shown that cognitive-behavioral approach is the most effective intervention among the available psychological interventions. This approach has an important role in reducing the relapse rate through the reduction of anxiety and depression, improvement of relationships with others, increase of self-esteem, and overall promotion of quality of life (Marllat & Owen, 2001). There is much evidence regarding the association between higher quality of life and more successful treatment of opiate addicts. It seems quality of life is improved after the initiation of treatment and during maintenance treatment (Maremmanni et al., 2007) and the degree of quality of life increases in many areas after the treatment of substance abuse. For example, the person experiences less physical pain or spends more time with his/her family. This may have a great impact on other aspects of life (Reno & Aiken, 1993). Therapy based on the quality of life is a new treatment method in the field of positive psychology, which has been developed with the aim of production of well-being, enhancement of satisfaction with life, and treatment of mental disorders such as depression in the context of life. This therapy has been developed via the combination of Beck's cognitive therapy in clinical domain, Mihaly's activity theory, and Seligman's positive psychology together (Frisch, 2006). In addition to those with disorders such as depression, the normal and healthy people who want to experience a higher level of well-being, mental health and, quality of life constitute the target groups of this therapy (Frisch, 2006). Most experts in this field agree that quality of life looks at positive and negative facts of life together (Hogerty, Cummins & Ferriss, 2001, Commings, 2005). Quality of life therapy is a therapeutic approach to increase the quality of life and life satisfaction.

Satisfaction with life is described as one's assessment of the various aspects of his/her life (Frisch & Sanford, 2005; Frisch et al., 2005). In this model, treatment is accomplished with bringing cognitive-behavioral changes in five main concepts, entitled CASIO (the first five letters of the concepts), which include circumstance, attitude or the perceptions by someone, standards of fulfillment, importance, and overall satisfaction with life. CASIO includes five strategies to create satisfaction in various domains and raises the quality of life based on the creation of satisfaction between what an individual wants and what s/he has (Frisch, 2006). Therapy based on quality of life is an attempt to increase the professional self-care or inner wealth and prevent burnout. This therapy is aimed at enhancing happiness by paying attention to problems and actualization in all precious areas of life. In quality of life therapy, self-care is equal to inner wealth and is defined as a sense of deep relaxation, comfort, concentration, affection, consciousness, and preparation to face the daily challenges of life in a thoughtful, romantic, compassionate, and comprehensive manner (Frisch, 2006).

Since drug abuse and addiction are increasing, the phenomenon of addiction, referred to as the plague of the century, have many negative effects on all aspects of life in addition to its high financial costs. Since chronic and long-term disorders such as addiction, as a crisis in people's lives, may lead to reduced

quality of life in mental and physical dimensions, the type of psychological interventions to improve the psychological aspects of these people is of crucial importance. There is much evidence regarding the presence of a relationship between higher quality of life and more successful treatment among opiate addicts. Positive Psychotherapy model based on quality of life focuses on different aspects of people's lives and activates all the life domains. In this way, this model tries to improve quality of life by providing positive cognitive and psychological solutions. Accordingly, the present study aims to examine the effectiveness of positive psychology based on quality of life in improving the quality of life of the individuals addicted to opiate drugs by means of Frisch's therapy model (Quality of Life Therapy), which is an integrated combination of both cognitive therapy and positive psychology.

## **Method**

### **Population, sample, and sampling method**

A quasi-experimental research design along with control group and pre-test, post-test and follow-up was employed for the conduct of this study. All the opiate addicts referring to treatment centers of Ardebil City in 2013 constituted the statistical population of the study. From the population, the number of 36 participants was selected as the sample via purposive sampling and randomly assigned into experimental and control groups. The criteria for the inclusion of the participants in this study were as follows: primary diagnosis of opioid dependence, not suffering from any psychiatric disorders, such as psychosis, delusion, impulse control, and organic disorders; being male, aged in the range of 20 to 50 years old; the minimum level of primary education, non-use of antipsychotics at the time of treatment; and living with family. In addition, unwillingness to participate in the therapy sessions constituted the exclusion criteria of the study. Then, the participants in the experimental group were invited to attend the sessions after obtaining their written consent.

### **Instrument**

**Quality of Life Questionnaire:** The questionnaire contains 24 questions and measures four areas of physical health, mental health, social relationships, and healthy environment (each of the areas consists of 7, 6, 3, and 8 questions, respectively). The first two questions do not belong to any of the areas and evaluate the overall health status and quality of life; therefore, this questionnaire encompasses the total number of 26 questions. After the conduct of the necessary calculations, a total score within the range of 4 to 20 is obtained for each area where the score 4 represents the worst status of each area and the score 20 represents the best status of each area. These scores can be converted to a score ranging from zero to 100. (WHOQOL group, 1996). The reliability of this scale was reported to equal .77, .77, .75, and .84 for physical health, mental health,



social relationships, and healthy environment, respectively. Cronbach's alpha coefficients were also obtained equal to .70, .73, .55, and .84 for physical health, mental health, social relationships, and healthy environment, respectively (Nejat, Montazeri, Majdzadeh, Mohamad & Holakouee Naini, 2006).

### Procedure

The experimental group received quality of life training based on the topics and goals of training sessions with the combination of positive psychology and cognitive-behavioral psychotherapy. Indeed, the number of eight one-hour training sessions was held (one session each week). However, the control group received no training and intervention. The contents of these sessions are presented in the table below.

**Table 1: Content of quality of life training sessions (combination of positive psychology and cognitive-behavioral approach)**

<i>Session</i>	<i>Brief description</i>
<b>First</b>	Introductory and acquaintance meeting, mention of the objectives and the introduction of the training course, discussion on quality of life and satisfaction with life, happiness, administration of the pre-test, feedback.
<b>Second</b>	Review of the previous session, definition of quality of life and introduction of its dimensions, discussion on the tree of life, discovery of some participants' problems, summary of the mentioned items, feedback.
<b>Third</b>	Review of the previous items, introduction of CASIO, starting from the dimension C as the first strategy, and its application in quality of life.
<b>Fourth</b>	Review of the previous items, discussion on CASIO, Introduction of A as the second strategy, and its application in quality of life.
<b>Fifth</b>	Review of the items mentioned in the previous session, continuation of discussion on CASIO, introduction of SIO as the third, fourth, and fifth strategies for the increase of satisfaction with life, teaching of fundamentals of quality of life.
<b>Sixth</b>	Review of the previous session, discussion on the principles of quality of life, provision of the principles and explanation on how to work with these principles to increase life satisfaction.
<b>Seventh</b>	Review of the previous items, continuation of discussion on principles of quality of life, discussion on the area of social relationships, and application of important principles in the area.
<b>Eighth</b>	A brief summary of the materials expressed during the previous sessions, conclusion of the items, teaching how to generalize CASIO in different circumstances, application of the principles of quality of life in different aspects of life, and administration of the post-test.

## Results

The mean score for the age of the sample was 40 years. In terms of marital status, 75% of the participants were married, 20% were single and 5% were on the verge of divorce. In terms of education, 60% of the participants held middle school degrees to diploma degrees. In addition, 90% of the participants were employed and earned enough money. Descriptive statistics of quality of life are presented in the table below for each group.

**Table 1: Descriptive statistics of quality of life for each group**

<i>Group</i>	<i>Pre-test</i>		<i>Post-test</i>	
	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>
<b>Experimental</b>	79.33	10.87	87.40	16.72
<b>Control</b>	71.65	15.33	7.68	16.43

Multivariate analysis of covariance was used to investigate the effectiveness of group therapy in quality of life. One of the assumptions of using MANCOVA test is the equality of variance-covariance matrix. Box test results suggest that this assumption has been met ( $P > .05$ ). The results of MANCOVA indicated the existence of a significant difference in the linear combination of components between the two groups (Eta squared = .36,  $P < .01$ ,  $F = 6.36$ , Wilks Lambda = .43). ANCOVA was used to examine differences in patterns as follows.

**Table 1: Univariate analysis of variance results representing the effectiveness of psychotherapy in quality of life**

<i>Component</i>	<i>F</i>	<i>Sig.</i>	<i>Eta squared</i>	<i>Statistical power</i>
<b>Physical health</b>	12.240	.001	.34	.91
<b>Mental health</b>	5.650	.016	.24	.72
<b>Social relations</b>	4.95	.041	.18	.27
<b>Environmental Circumstances</b>	3.33	.148	-	-

As it can be observed in the above table, psychotherapy based on quality of life has been effective in the improvement of physical health ( $P < .001$ ,  $F = 12.420$ ), mental health ( $P < .05$ ,  $F = 5.650$ ), and social relationships ( $P < .05$ ,  $F = 4.95$ ).

## Discussion and Conclusion

The present study was conducted with the aim of exploring the effectiveness of positive psychotherapy based on quality of life in the improvement of quality of life among opiate addicts. The results showed that psychotherapy based on quality of life has been effective in improving quality of life in post-test stage. In the literature, no specific study was found that show training of psychotherapy based on quality of life affects addicts' quality of life. However, the results of this study were compared with other studies since this therapy is an amalgamation of cognitive therapy and positive psychology. In this regard, the results of the current study regarding the effectiveness of cognitive behavioral

therapy in the improvement of opiate addicts' quality of life are consistent with the results of studies undertaken by Sugarman, Nich, & Carroll (2010), Osilla, Hepner, Muñoz, Woo & Watkins (2009), Driessen & Hollon (2011), and McHugh, Hearon & Otto (2010). To explain the above results, one can argue that quality of life is a complex, general, and multi-faceted concept that hinges upon the patient's physical and social conditions in addition to his/her mental interpretation. Therefore, it seems that it is necessary to administer a long-term and comprehensive intervention on not only the patient's psychological dimension, but also physical, social, and environmental dimensions should be assigned credit. Psychotherapy based on quality of life is done by brining cognitive-behavioral changes within five main areas, namely life circumstances, attitude or the perceptions by someone, standards of fulfillment, importance, and overall satisfaction (Frisch, 2006). Considering these areas and based on cognitive behavioral theory, drug dependence like other behaviors consists of a series of behaviors that have been learned through imitation of models. In fact, these behaviors have been acquired as a result of understanding the immediate outcomes of drug use, such as reduction of anxiety and depression, pain relief, and the enhancement of the ability of social interaction. Therefore, the most important goal of treatment is to identify critical antecedents and train the effective methods to the addicts so that they can rupture their connection with drugs. In addition, management skills of control over negative mood and anxiety and anger curb are emphasized. In this study, the effectiveness of the therapy in different aspects of addicts' quality of life, including physical, psychological, social relationships, and environmental conditions is in alignment with those findings that have proved the effect of cognitive behavioral therapy on opiate addicts' quality of life (Momeni, Moshtagh & Poorshahbaz, 2013). In this regard, another survey also showed that positive-oriented psychotherapy not only provides positive resources, but it can also have an interactive effect on negative symptoms among addicts and can act as a bulwark against the recurrence of these symptoms (Kordmirza Nikoozadeh, 2011). Based on the research findings, cognitive-behavioral approach is the most effective intervention among the available psychological interventions. This approach has an important role in reducing the relapse rate through the reduction of anxiety and depression, improvement of relationships with others, increase of self-esteem, and overall promotion of quality of life (Marllat & Owen, 2001). Psychotherapy based on quality of life applies its own tenets, including acceptance & loving self-body, failure share, going beyond schema & behaviors raised from original family, habit of happiness, sense of humor, rumination, individual wisdom, attention to positive points of the self, sound entertainments, and several other tenets. In this way, this approach helps people (here, opiate addicts) increase their marital satisfaction and quality of life through attitudinal changes, affect, and joy (Frisch, 2006).

In addition to working on documents, quality of life therapy provides some guidelines and principles to increase happiness and enhance problem-solving ability. It also replaces positive thinking with old thoughts by means of positive psychology and its principles. Considering the above-mentioned points and given that cognition, joy, and positive and negative affects are associated with quality of life; it can be claimed that positive psychotherapy based on quality of life is effective in opiate addicts' quality of life. Accordingly, the results of this study can be dealt with as an appropriate and effective model for the improvement of quality of life and it is suggested that the model be used in the treatment of substance abusers. The unfeasibility of long-term follow-up, selection of the participants from the drug users in private sectors of Ardabil City, employment of self-report methods for data collection, and the few number of therapy sessions were the limitations of the study. Therefore, it is recommended that future studies be conducted on larger samples. In addition, long-term follow up can be done to evaluate the effectiveness of treatment in the long run.

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## Abstract

**Objective:** This study was an attempt to investigate the effect of music therapy on addicts' state-trait anxiety rate in the stage of drug-free rehabilitation. **Method:** A quasi-experimental research design, along with pretest-posttest and control group was employed for the conduct of this study. The statistical population of the study included the addicts in the rehabilitation stage who had referred to the Clean Collaborators Rehabilitation Camp in Ardebil Province in November 2014. From this population, the number of 32 addicts in 16-50-year-old age range was selected as the participants of the study by convenience sampling method. State-Trait Anxiety Inventory was used for data collection. **Results:** The results of multivariate covariant analysis showed that there is a significant difference between control and experimental groups in state and trait anxiety. In other words, the state and trait anxiety of addicts in the experimental group had been reduced after music therapy. **Conclusion:** Considering the obtained results, it can be concluded that music therapy alone or along with other psychological interventions can be an effective method for reducing addicts' anxiety in drug-free rehabilitation stage.

**Keywords:** Addiction, Music Therapy, State-Trait Anxiety, Drug-Free Treatment

# Effectiveness of Music Therapy in State-Trait Anxiety Rate of Addicts in Drug-Free Rehabilitation Stage

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## Introduction

Addiction entails psychosocial abnormalities that emerge because of unnatural and unauthorized use of some substances such as alcohol, opium, hashish, etc. and lead to one's psychological dependence on substances (addiction). This dependence negatively affects one's mental and social performance and may even seriously threaten one's personal and social life in extreme situations (Noel, Brevers & Bechara, 2013). Addiction and side effects of drug abuse are considered among the big problems in the world. Difficulties arising from addiction affect all aspects of life, family, and even the community and detour great social resources in physical and spiritual realm (Lee, Herrenkohl & Kosterman, 2013). Among effects of substance abuse, it is possible to refer to overdose, transmission of infectious diseases, and mental health problems. The effects of substance abuse in the community can include crime, legal problems, family disintegration, and loss of productivity (Stein et al, 2010). The United Nations Office on Drugs considers addiction as one of the world's four crises. In addition, the prevalence of drug addiction in the world has been reported above half a percent while this figure in Iran amounts to one to two percent, which has made the deaths from addiction on the rise (Kameli, Hojjat, Jajarmi, Abedi & Kameli, 2013).

Drug dependence is a chronic disease that is often associated with other psychiatric disorders, including depression and anxiety disorders (Ilgen, Jain, Kim & Trafton, 2008). Psycho-personality characteristics of drug addicts do not only result from narcotic substances, but addicts have been suffering from many psychological and personality disorders before becoming addicted. Then, these disorders become extremely more serious after addiction, during abstinence, and after drug abstinence. The results of a survey showed that addicts receive a high score in psychosis and neuroticism pertaining to Eysenck Personality Inventory (Ketabi, Maher & Borjali, 2008). Khalatbari & Bazarganian (2010) showed that addicted patients with AIDS who were under methadone treatment suffered from high levels of depression, anxiety, and stress. Hojjati et al. (2011) examined the mental health of the addicts who were under drug-free treatment and concluded that the majority of the subjects suffered from high anxiety. In another study, Soleimani, Najafi, Elahi & Sharghi (2013) investigated the prevalence of anxiety and depression in the addicts under treatment and showed that 49.3 percent of the patients out of 150 ones suffered from anxiety symptoms and 50 of them suffered from depression. Applebaum, Bullis & Traeger (2010) also showed that the heroin addicts who under medical treatment for withdrawal were suffering from high levels of mood disorders and anxiety. Comorbidity psychiatric disorder in addicts under treatment leads to worse prognosis and treatment outcomes in addition to the imposition of high costs on the health care system (Nunes & Levin, 2004). Research has shown that mood disturbances such as anxiety and depression are held stable in addicts up to six months after



withdrawal (Charney, Palacios, Negrete, Pobkin & Gill, 2005). Research has also shown that 95 percent of addicts may have addiction relapse during the first 6 months of drug use withdrawal (Nastiezaie, 2007). Experience of depression and anxiety after drug use abstinence leads to the addicts' tendency to treatment with a rapid relapse to drug use (Shamloo, 2008). There are various methods for reducing and controlling anxiety in patients. Medication and behavioral techniques are among the most effective approaches to control and reduce the amount of anxiety (Janbozorgi & Noori, 2009). The most common drugs used to treat anxiety include benzodiazepines, tricyclic antidepressants, monoamine-oxidase inhibitors, serotonin re-uptake inhibitors, non-benzodiazepine anti-anxiety drugs (buspirone), Carbamazepine, propranolol, and hydroxyzine. Despite their rapid effect, these medical drugs have many side effects and should be used for 8 to 12 months in most cases where anxiety often relapses. The major drawback of these medications is the emergence of tolerance and dependence in case of long-term use (Pourafkari, 2010). Behavioral therapies are the drug-free anxiety-reductionist methods, which include therapeutic touch, heat and cold therapy, different types of relaxation methods (hypnosis, guided imagery, distraction, biofeedback, meditation, yoga, progressive muscle relaxation, and Benson muscle relaxation), and music therapy. In addition to being safe and inexpensive, these methods are also non-invasive (zolfaghari, 2003; cited in Hashemi & Zakeri Moghaddam, 2012). In recent years, the tendency to complementary and alternative therapies has increased and such therapies are being stabilized in many treatment and care-giving centers as secondary treatment and supportive therapies (Kelly, 2004). Drug-free approaches such as exercise, stress management programs, training of relaxation methods, and music therapy programs can prevent stress and mood disorders in the addicts under treatment (Winkelman, 2001).

One of the anxiety-reducing non-pharmaceutical interventions is music therapy, in which the rhythmic sound is used for communication, relaxation, and recovery (Zadeh Mohammadi, 2009). Ghetti (2011) emphasized the effectiveness of music therapy in reducing anxiety in the health sector. Today, it has been proved that music can improve physical, mental, and cognitive problems in patients and is introduced and used as an appropriate and effective intervention in various sectors, especially in public and psychiatric nursing hospitals and rehabilitation centers (Allred, Byers & Sole, 2010). Generally, according to the patient's activity, two types of music therapy, namely active and passive music therapies are used. Active music therapy includes singing, playing or composing music while passive music therapy includes listening to music (Kenyon, 2007). Central nervous system (brain) has been made in such a way that it gives a positive and appropriate response to musical stimuli and allows for the use of this therapy. When fear, restlessness, and anxiety prevail on somebody, a substance called Catecholamine or, say, adrenaline and noradrenaline are secreted from adrenal glands and leads to high blood pressure

and heart rates. Music reduces the release of this anxiety-generating material and, thereby, its function in the body lowers blood pressure and heart rates (Moreno, 2002; cited in Fallah, Sohrabi & Zadeh Mohammadi, 2011). Researchers have proved the effectiveness of music therapy in reducing anxiety of students (Fallah et al. 2011; Hajihasani, Sadipour, Jafarnejad, Rostami & Pirsaghi, 2012), in reducing anxiety of the patients in the cardiac intensive care unit (Hashemi et al., 2012 ; Argstater, Haberbosch & Bolay, 2011), in reducing anxiety of patients undergoing root canal therapy (Maleki, Ashayeri, Jafari, Alavi & Azimi, 2010; Razavian, Barekatin & Mohammadi, 2012), and in reducing pain and anxiety of the patients during burn dressing (Naderi, et al., 2014). It is possible to alleviate anxiety and mood disorders among addicts in the withdrawal stage by means of active and passive music therapy programs (Pankanen, 2007). Results of one study showed that 30-minute sessions of active music therapy can reduce addicts' mood disturbances (Hakwoort & Dijkstra, 2007). Khorramabadi, et al. (2012) showed that music therapy is effective in reducing anxiety and depression in the addicts during withdrawal. Music effectiveness in reducing anxiety drug addicts' anxiety during withdrawal and rehabilitation is to allow the addicts release their emotions and express their negative feelings more easily. These programs can be applied in the individual attempts for drug use withdrawal or in rehabilitation group sessions (Cassity & Cassity, 2010).

In the rehabilitation stage, physical and psychological comfort of addicts is very important. Therefore, due to the intensity of anxiety level and its adverse effects that can prevent drug use abstinence and/or lead to drug use relapse, it is essential for the healthcare team to use effective psychological interventions in reducing anxiety among the addicts under treatment in the rehabilitation stage. Therefore, considering the effectiveness of music relaxation method, the present study was conducted to investigate the effect of music therapy on reducing anxiety levels in drug-free rehabilitation stage.

## **Method**

### **Population, sample, and sampling method**

A quasi-experimental research design, along with pretest-posttest and control group was employed for the conduct of this study. The statistical population of the study included the addicts in the rehabilitation stage who had referred to Clean Collaborators Rehabilitation Camp in Ardebil Province in November 2014. From this population, the number of 32 addicts in 16-50-year-old age range was selected as the participants of the study by convenience sampling method (due to the absence of the list of all persons). Then, these participants were randomly assigned to two experimental and control groups (each group  $n = 16$ ). The criteria for the inclusion of the participants in this study were as follows: response to the pre-test and determination of anxiety level, acceptance

of the testing conditions (time and place, duration of sessions, etc.), non-use of music during the abstinence period, and avoidance of using sedatives one hour before the conduct of training. However, the exclusion criteria included failure to obtain the necessary score to determine anxiety, receiving training by another treatment program, non-acceptance of the conditions of the program, giving up frequent music listening habits during the period, and taking sedatives during training.

### **Instrument**

**Spielberger's State Trait Inventory:** This questionnaire was developed by Spielberger, et al. (1970). It consists of two scales, namely state anxiety and trait anxiety (latent). Each section includes 20 four-point items. Each item is scored from 1 to 4. To extract the correct answer from the patient, the questions have been positively and negatively arranged. The items numbered 1, 2, 5, 8, 10, 11, 15, 16, 19, and 20 in state anxiety and the items numbered 21, 23, 26, 27, 30, 33, 34, 36, and 39 in trait anxiety are scored in reverse. Spielberger et al (1970) reported Cronbach's alpha coefficients of .92 and .90 for state anxiety and trait anxiety, respectively. Abolghasemi (2002) used Facilitative and Debilitative Anxiety Scale to evaluate the validity of State Trait Inventory. The results were indicative of the significance of the correlation between State Trait Inventory and subscales of Facilitative and Debilitative Anxiety Scale (cited in Abolghasemi & Narimani, 2006).

### **Procedure**

In this study, the researchers referred to Clean Collaborators Rehabilitation Camp in Ardebil Province to determine the sample and collect the required data. After coordination with the Camp Chairman, one of the camp rooms was determined as a place of work for the researchers. Then, a meeting was held between the researchers and the Camp Chairman and the required data and information in connection with the situation of the addicts were collected. Then, the selected addicts were randomly grouped and were justified to participate in each group. The experimental group attended the designated room for a week, two hours a day and participated in active and passive musical activities with the researchers. Standly (1992) examined different musical therapies in 55 surveys and studies and reported seven active and passive music therapy approaches as follows: passive listening to music, actively participating in music programs, discussion and advice on music, music and topics related to the development and training, music and actuator, music combined with biofeedback, and music and group activities (cited in Zadeh Mohammadi, 2009). In this study, the first, second and third music therapy methods were used for the experimental group. Passive music entails listening to non-verbal joyful pieces. The certain melody should include pleasurable musical themes to create vitality and joy in patients. Bracing (joyful) themes are the rhythmic pieces with a relatively lively melody,

which induces vitality and joy away from excitement and impatience and is followed by stability and composure (Zadeh Mohammadi, 2009). Active musical affairs in music therapy sessions of the current study included discussion on musical passions, singing, and declamation along with the sound of the piano. The control group received no intervention at the beginning and completed the research questionnaire just for data collection purposes.

**Table 1: A brief description of eight separate sessions of music therapy**

<i>Content</i>
First session: Administring the pre-test with a refreshing listening to the non-verbal piano music, including (other produced pieces and dancing leaves)
Second session: Narrating the negative physical and mental feelings along with playing peaceful piano pieces
Third session: Playing peaceful piano pieces and encouraging the patient to talk about his/her feelings and concerns
Fourth session: playing exhilarating and refreshing nonverbal pieces (I owe you and Land Angel) along with declamation of the songs that are sympathetic with the patients
Fifth session: Playing peaceful piano pieces and encouraging patients to sing songs in their own praise
Sixth session: Playing peaceful piano pieces and talking about feelings, thoughts or memories pertaining to the song lyrics and completing the questionnaire

**Results**

The sample aged 16 to 45 years old with the mean and standard deviation of 29.56 and 2.35, respectively. The descriptive statistics of the variables under study are presented in the table below for each group and test type.

**Table 2: Descriptive statistics of the variables under study for each group and test type**

<i>Variable</i>	<i>Pre-test</i>				<i>Post-test</i>			
	<i>Music therapy</i>		<i>Control</i>		<i>Music therapy</i>		<i>Control</i>	
	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>
<b>State anxiety</b>	68.54	6.36	66.60	7.32	33.5	7.9	62.4	7.50
<b>Trait anxiety</b>	69.14	5.67	65.14	7.00	46.9	7.80	64.0	9.30

Multivariate analysis of covariance should be used to evaluate the effectiveness of music therapy in the reduction of state and trait anxiety. One of the assumptions of using this test is the homogeneity of variance of the error. To this end, Levene's test was conducted and the results indicated that this assumption has been met. In the same way, box test was used to evaluate the assumption of the homogeneity of variance/covariance matrix. The results of this test showed that this assumption has also been met ( $p < .05$ ,  $F = 1.570$ ,  $M\ Box = 5.11$ ). The results of MANCOVA suggested the existence of a significant difference in the linear combination of components between the two

groups ( $P < .001$ ,  $F = 8.84$ , Wilks Lambda = .38). Univariate analysis of covariance was used to examine differences in patterns as follows.

**Table 3: Univariate analysis of variance results representing the difference in patterns**

<i>Source</i>	<i>Variable</i>	<i>Sum of squares</i>	<i>df</i>	<i>Mean Square</i>	<i>F</i>	<i>Sig.</i>	<i><math>\eta^2</math></i>
<b>Group</b>	State anxiety	7003.80	1	7003.80	258.70	.0005	.909
	Trait anxiety	2156.21	1	2156.21	42.35	.0005	.620
<b>Error</b>	State anxiety	703.89	26	27.07	-	-	-
	Trait anxiety	1323.78	26	50.91	-	-	-

As it can be observed in the above table, music therapy could reduce state and trait anxiety in the experimental group.

### Discussion and Conclusion

The present study was an attempt to evaluate the effect of music therapy on reducing the State-Trait Anxiety among drug addicts in drug-free rehabilitation stage. The findings of this study showed that active and passive music therapy interventions are effective in reducing drug addicts' state-trait anxiety, and this finding is consistent with the findings of other research. Heldam, Dahlie & Weilgram (2009) stated that music would influence the affective system (limbic). The exposure of music therapy sessions to the addicts during abstinence and recovery can increase positive affect and reduce anxiety (Khoramabadi et al., 2012). Bavari & Borna (2009) showed that relaxation technique and music therapy could significantly reduce addicts' anxiety in rehabilitation stage, which led to control of some experimental behaviors, such as irrelevant thoughts, aggression, and craving for substance use and totally reduced the possibility of resuming drug use. Punkanen (2007) concluded that addicts' mood and anxiety disturbances could be alleviated using active and passive music therapy programs in the withdrawal stage. Hakwoort & Dijkstra (2007) showed that 30-minute sessions of active music-therapy could reduce mood disturbances. Khorramabadi, et al. (2012) showed that music therapy is effective in reducing anxiety and depression of the addicts in the withdrawal stage. In explaining these results, it can be asserted that listening to relaxing music along with the stimulation of alpha waves in the brain can lead to a relaxing state through the release of endorphins and dopamine and through the decrease of catecholamine secretion. Hence, depression, anxiety, and anger are reduced. It also reduces blood pressure and heart rate and, thereby, the relaxation response is activated. For this reason, music and music therapy can help people cope with the devastating effects of anxiety. This leads not only to relaxation, but also leads to people's health. Music reduces blood pressure and muscle tension and leads to positive thinking in mind. As a result, it can be used in the treatment of depression and anxiety. Music can also reduce the negative effects of stress on

the body and increase the power of creativity and optimism (Scott, 2014). It can be noted that music therapy reduces anxiety rate in the addicted people during drug use withdrawal and this is consistent with other research findings. The findings of the current study confirm the effect of music therapy on reducing anxiety in addicts in the rehabilitation stage and lay emphasis on the use of music therapy as a novel therapeutic approach in the treatment of anxiety disorders among addicted patients. Researchers have referred to the inappropriate mental health status as the main cause of prevalence of addiction and relapse after treatment. Based on self-medication theory, substance abuse is viewed as a form of self-cure by addicts. Indeed, addicts turn to substance abuse to solve problems such as depression and anxiety (Mollazadeh & Ashoori, 2009). Abnormal emotions and feelings of anxiety are one of the potential pre-addictive areas in treated addicts. Many addicted patients use drugs for anxiety reduction and anger control after withdrawal (Zainali, Vahdat & Eisavi, 2008). Disorders such as anxiety, depression, and the like play an important role in resuming drug use after abstinence. Providing psychological services in rehabilitation period can reduce anxiety and depression in addicts (Bavari & Borna, 2009). Music therapy can be a major component of anxiety treatment program. Listening to songs for the sympathy and evacuation of concerns and sadness, discussion about different relaxation feelings with relaxing music, and friendly group communications in music activities are exceptional opportunities to help patients to self-adapt. Patients maintain the connection and continuity of their past feelings with the future through these activities (Zadeh Mohammadi, 2009). The results of the present study were in line with the results of other studies, which suggest that the use of music as a new method of therapy can be an effective technique in reducing the disorders related to addiction, especially anxiety. The most important limitation of this study can be mentioned as the small sample size; therefore, care and discretion should be exercised in the generalization of the results. It is recommended that the efficacy of music therapy be compared with other important approaches that are effective in improving addicts' anxiety so that a more acceptable reliability regarding the effectiveness of this therapy can be achieved.

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## Abstract

**Objective:** The current study was conducted to investigate the pattern of structural relations between deviant personality traits, risk perception, and treatment motivation in people with substance dependency. **Method:** A descriptive-correlational method was used in this study. All the drug addicts referring to Ardabil centers of addiction treatment in second half of 2014 constituted the statistical population of this study. The number of 140 individuals from this population was selected via cluster sampling and responded to Stages of Change Readiness and Treatment Eagerness Scale, Personality Deviance Scale, and Cognitive Appraisal of Risky Events (CARE) Questionnaire. **Results:** The results showed that risk perception and three components of treatment motivation are negatively correlated with hostile thoughts, denigration of others, low self-confidence, dependency, submissiveness. However, risk perception was positively associated with the three components of treatment motivation. The results of regression analyses also revealed that 53% of variance of recognition, 44 % of variance of ambivalence, and 47 % of variance of step taking were explained by deviant personality traits. Model fitness indexes confirmed the path of deviant personality traits to treatment motivation via the mediating role of risk perception. **Conclusion:** The findings of this study suggest that low risk perception is one of the explanatory pathways for the relationship between deviant personality traits and treatment motivation.

**Keywords:** Deviant Personality Traits, Risk Perception, Treatment Motivation, Substance Dependence

# Structural Relation Pattern between Deviant Personality Traits, Risk Perception and Treatment Motivation in People with Substance Dependency: The Mediating Role of Risk Perception

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## Introduction

One of the salient features of people with drug dependence is continuous consumption of drugs despite their negative consequences, such as serious medical conditions, legal problems, and losing jobs, friends, and social base (Petry, Bickel & Arnett, 1998). According to the available statistical figures, addicts refer to rehabilitation centers more than 2 to 3 times. This shows that there are significantly high rates of addiction in such people (Hojjati, Alvestani, Akhundzade, Heydari, & Sharifnia, 2011). Studies have shown that 20 to 90 percent of the addicts under treatment undergo relapse (Rozen et al., 2006). In most cases, these people are skeptical about addiction withdrawal; therefore, this doubt and hesitation leads them not to quickly seek treatment or even not to think of treatment at all. All these issues are regarded the addicts' problems related to motivation and enthusiasm for addiction withdrawal (Tomb, 1999). Since motivation is the most important step for any action or behavioral change, treatment-seekers' motivation for change is one of the important points of clinical attention in the treatment of substance abuse disorders. Motivation for change and treatment, described as treatment-seekers' responsibility and dutifulness, is a major prerequisite for treatment, without which the therapist is unable to be successful in the treatment (Beckman, 1980). Cunningham, Cameron & Koski-Jannes (2005) showed that the addicted individuals who recover without treatment go through a cognitive-assessment process. During this process, all the pros and cons of behavior are assessed and, ultimately, expected profits and losses of change are one of the subjects' motivational justifications for addiction withdrawal. Ball (1989) found that some of the scales of Temperament and Character Inventory can predict the consequences of treatment in substance abusers. Cloninger (1991) discovered that the scales and subscales of Temperament and Character Inventory are associated with the prediction of alcoholic persons' treatment although this association was not as strong that of NEO personality dimensions. In addition, Cloninger (1991) found that the adolescents who have positive expectations from themselves show higher willingness and enthusiasm for the treatment of alcoholism. In a study based on Eysenck's three-factor model (1998), it was revealed that those who drink a lot of alcohol obtain higher scores in both neuroticism and psychosis and tendency to alcohol consumption is significantly reduced compared to the control group. Momeni (2009) also indicated that both family's perception and addicts' perception to treatment play a pivotal role in predicting substance abusers' motivation for treatment. Jaff (2005) explored the relationship between aggression and use of stimulant drugs and concluded that aggression is positively correlated with the use of some stimulant drugs (crack and amphetamines). Parker, Taylor, Eastabrook, Schell & Wood (2008) also found that failure to establish affective relationship and expression of hostile behaviors in interpersonal relationships with others lead to substance abuse in people.

Evidence in this area also indicates that methamphetamine use is correlated with psychiatric disorders (Mehrabizadeh Honarmand, Shaheni & Fathi, 2008), anti-social behavior (Embry, Hankins, Biglan & Boles, 2009), psychosis and anxiety (Pluddemann, Flisher, Mcketin, Parry & Lombard, 2010) and low self-control (Otten, Barker, Maughan, Arseneault & Engels, 2010). Joseph, Manafi, Iakovaki & Cooper (2003) showed that motivation for smoking is associated with self-efficacy of withdrawal; and low self-efficacy is also correlated with automated smoking habit, control of negative affect, and impaired social skills. Nieva, et al. (2011) showed that high levels of impulsivity predict addiction relapse in men. Zemore & Ajzen (2014) also showed that treatment-related attitudes and perceived control independently predict decision for drug use withdrawal. Herrero-Fernández, Macía-Guerrero, Silvano-Chaparro, Merino & Jenchura (2016) showed that high-risk behavior is significantly correlated with impulsivity, conscientiousness, and skin conductance level (as an indicator of risk perception). These three factors could predict vulgar risky behaviors.

Evidence suggests that the variability in the level of motivation in drug addicted treatment-seekers can be associated with the perception of behavioral risks. This means that substance abusers show higher risk taking due to their poor risk perception. The perception of risk is related to how one processes the following three aspects: 1) value: it refers to the reward and penalty for any behavior; 2) time: it refers to the time of a reward or punishment after choosing different behaviors; and 3) possibilities: it refers to the certainty or uncertainty of the selected behavior to be followed by some degree of reward or punishment (Lennart, Bjorg-Elin & Torbjorn, 2004). Baker & Washousky (1993) showed that the boys with antisocial tendencies and mental disorders have different performance in gambling tests. Vanhonk, Hermans, Putman, Montague & schutter (2002) also showed that people with a high degree of mental disorder are not able to perceive and avoid risk during the game due to the prefrontal cortex lesion. Bates & Labouvie (1995) watched 1270 substance abusers who referred to detoxification centers for two years. They found that patients with a high level of risk perception are more willing to and eager for treatment. These individuals also showed lower relapse rates (17%) after the first 6 months compared to patients with low risk perception (54%). Cloninger (1987) also reported the availability of a positive relationship between high risk perception and motivation for withdrawal and treatment of alcoholism in pregnant women. Lopez-Quintero & Neumark (2010) also showed that higher levels of risk perception in adolescents are correlated with lower tendency to smoking marijuana and higher motivation for withdrawal. Williams, Herzog & Simmons (2011) also showed that the cigarette smokers with lower risk perception are less inclined to stop smoking. Individual differences in risk perception have shown that personality factors have an important role in risk perception. Vollrath, Knoch & Cassano (1999) concluded that personality dimensions of agreeableness and conscientiousness have a negative direct effect and a negative

indirect effect on the perception of health vulnerability via high-risk health behaviors. Neuroticism was the only personality dimension that had a negative indirect effect and a positive direct effect on vulnerability perceptions.

The results of Hampson, Severson, Burns, Slovic & Fisher's study (2001) showed that the perceived benefits against perceived risks, the level of education, and independence are directly associated with participation in alcohol-related activities. Sensation seeking, self-control, progress, and independence were indirectly correlated with alcohol-related activities through perceived benefits against risks. Ulleberg & Rundmo (2003) showed that there was a relationship between personality traits and risk perception while the individual's attitudes has a mediation role in this relationship. It was also revealed that personality influences risky driving behaviors both directly and indirectly by affecting attitudinal determinants. In a study entitled "Personality and risk perception in transport", Fyhri & Backer-Grondahl (2012) found that personality trait of emotional stability in the face of neuroticism and agreeableness is positively correlated with risk perception. Hosker-Field, Molnar & Book (2016) examined the mediating role of risk perception in the relationship between psychopathy and risk taking and showed that two components of psychopathy, i.e. callous affect and interpersonal manipulation are indirectly correlated with risky behaviors via low risk perception. Similarly, quirky lifestyle was indirectly associated with fun risk-taking and safety/health.

Clinical evidence shows that drug dependent people are less motivated towards treatment and there is a high possibility of addiction relapse in such people during the next three months in case of successful treatment (Asghari, Poorshahbaz & Farhoudia, 2011). However, in previous studies, motivation for treatment in addicts and its effective factors had been less focused. Given the importance of motivation for withdrawal in the treatment of addiction, the current study was carried out to test the pattern of structural relations between deviant personality and treatment motivation traits with the mediation of risk perception in people with substance dependency.

## **Method**

### **Population, sample, and sampling method**

A descriptive-correlational method was used in this study. All the drug addicts referring to Ardabil centers of addiction treatment in second half of 2014 constituted the statistical population of this study. The number of 140 individuals from this population was selected via cluster sampling and participated in this study. For data collection, a list of addiction treatment centers licensed by welfare organization or university of medical sciences in Ardabil was prepared. Then, one center was randomly selected from welfare organization centers and one center was also randomly selected from university of medical sciences centers. After visiting these two centers, the researcher was provided with the

files of all the clients. Thereafter, 70 patients were selected from each center. These people were diagnosed with dependence on psychotropic substances at least for one month according to their files. In the next step, they were asked to individually respond to Stages of Change Readiness and Treatment Eagerness Scale, Personality Deviance Scale, and Cognitive Appraisal of Risky Events (CARE) Questionnaire in the location of the centers. Diagnosis of at least one month dependence on psychoactive substances, placement in the age range of 20-40 years, and junior high school degrees and above constituted the criteria for the inclusion of the participants. On the other hand, reluctance for participation in the research was the exclusion criterion. Finally, 11 persons were excluded from the study because of reluctance to participate in the study or incomplete filling of the questionnaires.

### **Instrument**

1. Stages of Change Readiness and Treatment Eagerness Scale: SOCRATES is an experimental instrument that was designed by Miller & Tonigan in 1996 to assess readiness for change in drug abusers. It contains 19 items and measures treatment motivation on a 5-point Likert scale ranging from strongly disagree (1) to strongly agree (5) in three subscales, namely recognition, ambivalence, and taking steps. A high correlation has been reported between the scores of participants in three component of recognition ( $r=.96$ ), taking steps ( $r=.94$ ), and ambivalence ( $r=.88$ ) with scores of the 39-item version of this scale. Cronbach's alpha coefficients of recognition, ambivalence, and taking steps were reported to range from .85 to .95, .60 to .88, and .83 to .96, respectively (Miller & Tonigan, 1996). These coefficients on the sample of the current study were .76, .71, and .85 for recognition, ambivalence, and taking steps, respectively.

2. Cognitive Appraisal of Risky Events (CARE) Questionnaire: This scale was designed by Fromme, Katz & Rivet (1997) to assess the outcome expectations of young adults about the risks and benefits of engaging in high-risk activities. This scale contains four 30-item subscales as follows: 1. Expected risks, 2. Expected benefits: They measure the likelihood of positive and negative consequences expected by the respondents in 30 high-risk activities on a 7-point Likert scale. 3. Expected involvement: It measures the likelihood of participants' engagement in any risky activity during the next 6 months. 4. Past frequency: It deals with the number of times that participants have become engaged in risky behavior in the past. It is noteworthy that either expected involvement or past frequency is usually used at any time. Exploratory and confirmatory factor analysis revealed that the questionnaire measures six domains, including stimulant drug use, aggressive and illegal behaviors, risky sexual activities, heavy drinking, high risk sports, and academic/work behaviors. Cronbach's alpha coefficients of these six subscales were obtained in the range of .64 (high-risk sports) to .88 (academic/work behaviors) (Fromme et al., 1997). In this study, the subscale expected risks was used and Cronbach's alpha coefficients of

components of the subscale were obtained in the range of .68 (risky sexual activities) to .93 (academic/work behaviors).

3. Personality Deviance Scale: This scale is a 36-item instrument that was developed by Bedford & Foulds (1978) and is widely in research domain and clinical applications. This scale assesses six deviant dimensions, namely hostile thoughts, denigration of others, lack of self-confidence, dependency, hostile acts, and dominance-submissiveness on a Likert scale from strongly disagree (1) to strongly agree (4). The internal consistency for the subscales of this test has been reported acceptable and Cronbach's alpha coefficients for the subscales ranged from .68 (hostile acts) to .80 (hostile thoughts) (Bedford & Deary, 2003).

## Results

**Table 1: Descriptive statistics and correlation coefficients of deviance personality traits, risk perception, and factors of treatment motivation**

<i>Variable</i>	<i>(SD) M</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>
<b>Hostile thoughts</b>	(4.54) 16.15	1	-	-	-	-	-	-	-	-
<b>Denigration of others</b>	(4.54) 16.32	.57**	1	-	-	-	-	-	-	-
<b>Lack of self-confidence</b>	(4.91) 14.26	-.03	-.20*	1	-	-	-	-	-	-
<b>Dependency</b>	(4.71) 15.73	.44**	-.66**	-.10	1	-	-	-	-	-
<b>Hostile acts</b>	(3.71) 17.51	.41**	.42**	.10	.37**	1	-	-	-	-
<b>Submissiveness</b>	(4.46) 16.12	.55**	.51**	-.10	.58**	.26*	1	-	-	-
<b>Risk perception</b>	(39.19) 106.33	-.45**	-.38**	-.25**	-.31**	-.16	.43**	1	-	-
<b>Recognition</b>	(6.07) 22.51	-.51**	-.54**	-.36**	-.37**	-.15	-.53**	.72*	1	-
<b>Ambivalence</b>	(3.57) 13.31	-.46**	-.45**	-.31**	-.33**	-.10	.47**	.67*	.85	1
<b>Taking steps</b>	(7.32) 26.05	-.51**	-.47**	-.34**	-.29	-.10	-.44**	.72*	.91	.88

\*\* P<.01; \* P<.05

The number of 129 subjects with the mean and standard deviation of 31.41 and 7.97 years participated in this study. Among this sample, the number of 101 participants (78.3%) was male and the number of 28 participants (21.7%) was female. In terms of education, the number of 11 participants (8.5%) had primary education, 47 participants (36.4%) had junior high school education, 53 participants (41.1%) had senior high school education, and 18 participants (14%) held bachelor's degrees. In terms of employment, 4 participants (3.1%) held government jobs, 68 participants (52.7%) were self-employed, 56 participants (43.4%) were unemployed, and one participant had not responded to this question. In terms of monthly income, 3 participants (2.3%) reported a monthly income lower than 100 dollars, 38 participants (29.5%) reported a monthly

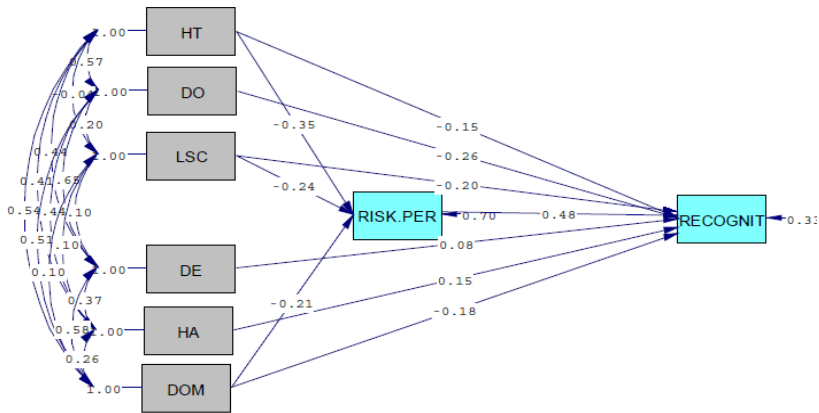
income between 100 and 180 dollars, 75 participants (58.1%) reported a monthly income between 180 and 330 dollars, and 13 participants (10.1%) reported a monthly income above 330 dollars. The number of 42 participants (32.6%) had history of previous drug abstinence while 87 participants (67.4%) did not report any history of previous drug abstinence.

The results of regression analysis pertaining to motivational factors based on deviance personality traits are presented below.

**Table 2: Results of regression analysis pertaining to motivational factors based on deviance personality traits**

<i>Criterion variables</i>	<i>Predictor variables</i>	<i>R<sup>2</sup></i>	<i>F</i>	<i>Sig.</i>	<i>B</i>	<i>SE B</i>	<i>β</i>	<i>t</i>	<i>Sig.</i>
Recognition	Hostile thoughts				-.43	.12	-.32	-3.55	.001
	Denigration of others				-.35	.13	-.26	-2.67	.009
	Lack of self-confidence	.53	21.81	.001	-.40	.08	-.32	-4.8	.001
	Dependency				.07	.12	.06	.65	.51
	Hostile acts				.35	.12	.22	3.00	.003
	Submissiveness				-.39	.12	-.29	-3.32	.001
Ambivalence	Hostile thoughts				-.28	.08	-.35	-3.59	.001
	Denigration of others				-.12	.09	-.15	-1.35	.17
	Lack of self-confidence	.44	14.91	.001	-.22	.05	-.30	-4.06	.001
	Dependency				.01	.07	.01	.07	.94
	Hostile acts				.23	.08	.24	2.97	.004
	Submissiveness				-.20	.07	-.25	-2.65	.009
Taking steps	Hostile thoughts				-.71	.15	-.44	-4.64	.001
	Denigration of others				-.32	.17	-.20	-1.89	.06
	Lack of self-confidence	.47	17.06	.001	-.51	.11	-.33	-4.59	.001
	Dependency				.11	.15	.07	.71	.47
	Hostile acts				.50	.15	.26	3.34	.001
	Submissiveness				-.28	.15	-.17	-1.83	.06

Results of the table above show that 53% of the recognition variance, 44% of the ambivalence variance, and 47% of the taking steps variance are accounted for by deviant personality traits. Results of regression coefficients also show that hostile thoughts, denigration of others, lack of self-confidence, and submissiveness reversely predict recognition while hostile acts directly anticipate recognition. Hostile thoughts, lack of self-confidence, and submissiveness reversely predict ambivalence while hostile acts directly predict ambivalence. In addition, hostile thoughts and lack of self-confidence reversely predict taking steps while hostile acts directly predict taking steps.



**Figure 1: Flow diagram of deviant personality traits and recognition: the mediating role of risk perception**

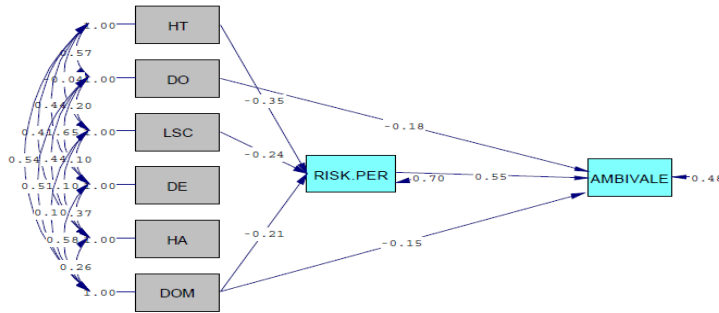
Figure 1 shows that hostile thoughts, denigration of others, lack of self-confidence and dominance have a direct negative impact on recognition; however, hostile acts have a direct effect on it. Moreover, the path model shows the three traits of hostile thoughts, lack of self-confidence, and dominance indirectly affect recognition via the mediation of risk perception.

**Table 3: Goodness of fit indexes for the path model of deviant personality traits and recognition: mediating role of risk perception**

<i>Goodness of fit indexes</i>	<i>Value</i>	<i>Acceptable level</i>	<i>Model status</i>
<b>Chi-square (significance level)</b>	(.78) 1.08	P<.05	Good fit
<b>Ratio of Chi-square to df</b>	.36	<3	Good fit
<b>GFI</b>	1	0 (no fit) to 1 (perfect fit)	Good fit
<b>AGFI</b>	.97	0 (no fit) to 1 (perfect fit)	Good fit
<b>RMSE (CI)</b>	.01 (0.0-.10)	<.08	Good fit
<b>NFI</b>	1	0 (no fit) to 1 (perfect fit)	Perfect fit
<b>NNFI</b>	1.03	>.90	Perfect fit
<b>CFI</b>	1	0 (no fit) to 1 (perfect fit)	Perfect fit

According to the different statistics pertaining to the goodness of fit indexes, the model enjoys a good fit and the theoretical model fits the observed data in the sample.





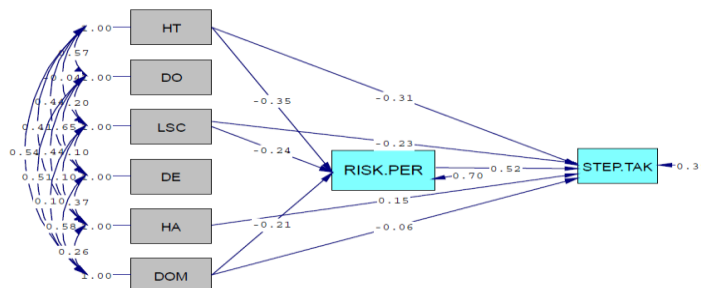
**Figure 2: Flow diagram of deviant personality traits and ambivalence: the mediating role of risk perception**

The above figure shows that denigration of others and dominance have a direct negative impact on ambivalence; however, hostile thoughts, lack of self-confidence, and dominance indirectly affect ambivalence via the mediation of risk perception.

**Table 4: Goodness of fit indexes for the path model of deviant personality traits and ambivalence: mediating role of risk perception**

<i>Goodness of fit indexes</i>	<i>Value</i>	<i>Acceptable level</i>	<i>Model status</i>
Chi-square (significance level)	12.35 (.08)	$P < .05$	Good fit
Ratio of Chi-square to df	1.76	$< 3$	Good fit
GFI	.98	0 (no fit) to 1 (perfect fit)	Good fit
AGFI	.88	0 (no fit) to 1 (perfect fit)	Good fit
RMSE (CI)	.07 (0.0-.15)	$< .08$	Average fit
NFI	.98	0 (no fit) to 1 (perfect fit)	Good fit
NNFI	.95	$> .90$	Good fit
CFI	.99	0 (no fit) to 1 (perfect fit)	Good fit

As per the different statistics pertaining to the goodness of fit indexes, this model also enjoys a good fit and the theoretical model fits the observed data in the sample.



**Figure 3: Flow diagram of deviant personality traits and taking steps: the mediating role of risk perception**

The above figure shows that hostile thoughts and lack of self-confidence have a direct negative impact on taking steps, but hostile acts have a positive direct effect on taking steps. Moreover, hostile thoughts, lack of self-confidence, and dominance indirectly affect taking steps via the mediation of risk perception.

**Table 5: Goodness of fit indexes for the path model of deviant personality traits and taking steps: mediating role of risk perception**

<i>Goodness of fit indexes</i>	<i>Value</i>	<i>Acceptable level</i>	<i>Model status</i>
<b>Chi-square (significance level)</b>	7.55 (.18)	$P < .05$	Good fit
<b>Ratio of Chi-square to df</b>	1.51	$< 3$	Good fit
<b>GFI</b>	.99	0 (no fit) to 1 (perfect fit)	Good fit
<b>AGFI</b>	.90	0 (no fit) to 1 (perfect fit)	Good fit
<b>RMSE (CI)</b>	.06 (0.0-.15)	$< .08$	Average fit
<b>NFI</b>	.99	0 (no fit) to 1 (perfect fit)	Good fit
<b>NNFI</b>	.97	$> .90$	Good fit
<b>CFI</b>	1	0 (no fit) to 1 (perfect fit)	Perfect fit

As per the different statistics pertaining to the goodness of fit indexes, this model also enjoys a good fit. This means that the theoretical model fits the observed data in the sample.

### Discussion and Conclusion

Over the past few years, although researchers and clinicians have paid increasing attention to the concept of motivation and its role in improving the problems associated with drug use, the important factors influencing it have not yet been studied. Therefore, the present study aimed to determine the direct and indirect effects of personality deviation traits on treatment motivation among drug-dependent individuals through the mediating role of risk perception. The results of this study showed that personality traits of hostile thoughts, denigration of others, lack of self-confidence, and dominance have a direct negative effect on recognition whereas hostile acts have a direct positive effect on recognition. These results, representing the relationship of deviant personality traits with substance use, are consistent with findings of the studies done by Jaff (2005), Mehrabizadeh Honarmand, et al. (2008), Parker et al. (2008), Embry, et al. (2009), and Pluddemann, et al. (2010). The common feature of these three traits, i.e. hostile thoughts, denigration of others, and domination is external punishment, which is characterized by projection of hostility to the outside environment. It seems that people with these personality traits disclaim any dysfunctional behaviors and are less likely to recognize the available difficulties in their behavior. In addition, lack of self-confidence is associated with low self-efficacy in control of behavioral consequences; therefore, it can be claimed that

it is followed by low motivation for treatment. Path analysis results showed that the three traits of hostile thoughts, lack of self-confidence, and dominance indirectly affect recognition with the mediation of risk perception. These findings, representing the association of personality traits with risk perception, are also consistent with those of the studies conducted by Vollrath (1999), Ulleberg & Rundmo (2003), Fyhri & Backer-Grondahl (2012), and Hosker-Field, et al. (2016). Risk perception is a cognitive assessment of the risks caused by situational factors or by one's own behavior. People with hostile and domineering thoughts are less worried about the consequences of their actions since they are impulsive actors.

On the other hand, in risky decision-making process, it has been suggested that the perceived risk assessment requires cognitive and emotional processing (Weber & Johnson, 2009). It can be argued that the weakness of this process in people with deviant personality traits may be associated with low engagement. In addition, drug dependent individuals with lower self-confidence assign negligible value to their abilities and, thereby, do not notice the behavioral consequences of their actions and show a higher level of risk-taking.

Results of the study also showed that denigration of others and domination have a direct negative effect on ambivalence. These results represent that various deviant personality traits are related with drug use and are consistent with the findings obtained by Jaffe (2005), Mehrabizadeh Honarmand, et al. (2008), Parker, et al. (2008), Embry, et al. (2009), and Pluddemann, et al. (2010). Ambivalence is a condition in which a person is exposed to opposing forces for action. Denigration of others and domination are negative factors in moving toward behavioral change. The results of this study also showed that hostile thoughts, lack of self-confidence, and domination have an indirect effect on ambivalence with the mediation of risk perception. These results are consistent with the findings of the studies done by Vollrath (1999), Ulleberg & Rundmo (2003), Fyhri & Backer-Grondahl (2012), and Hosker-Field, et al. (2016). Hostile thoughts, domination and lack of self-confidence can be considered as the inefficient defense mechanisms that occasion the sense of indecision and hesitation or indecisiveness and ambivalence.

Path analysis results also showed that personality traits of hostile thoughts and lack of self-confidence have a direct negative impact on taking steps, but hostile acts have a direct positive effect on taking steps. These results are also consistent with the findings of the research done by Jaff (2005), Mehrabizadeh Honarmand, et al. (2008), Parker, et al. (2008), Embry, et al. (2009), and Pluddemann, et al. (2010). People with a high score in taking steps usually do some activities to create positive changes in their behavior and may gain some achievements in this regard. It is noteworthy that any practical action for bringing successful changes requires optimism and efficacy in the continuation of treatment; therefore, one can argue that hostile thoughts and lack of self-confidence can be considered as the main obstacles in this process by increasing mental rumination.

However, since hostile acts represent the use of purposeful action and anger expression, they can be a positive factor towards taking steps through the reduction of rumination. Furthermore, emotional discharge of hostile thoughts can be another contributory factor. The results of the current study also showed that hostile thoughts, lack of self-confidence, and dominance indirectly affect taking steps via risk perception.

In line with the results obtained by Vollrath (1999), Ulleberg & Rundmo (2003), Fyhri & Backer-Grondahl (2012), and Hosker-Field, et al. (2016), it is possible to claim that these three personality traits negatively affect the assessment of cognitive behavioral outcomes of drug use. Hence, these traits can lead to poor risk perception of these behaviors and may be followed by poor taking steps in treatment. A second explanation for the interaction of deviant personality traits with taking steps can reduce concerns about morality in people with deviant personality traits, which is associated with lower risk perception (Glenn, Iyer, Graham, Koleva & Haidt, 2009).

The results of this study showed that deviant personality traits, especially hostile thoughts, lack of self-confidence, and dominance both directly and indirectly affect low risk perception and are associated with low motivation for treatment in drug-dependent individuals. The use of drug-dependent persons who referred to outpatient rehab centers and inability to control the type of the substance used were two major limitations of the present study. Therefore, it is recommended that future studies be done on the individuals dependent on some types of drugs who have not referred to detoxification centers. In addition, due to the variability of motivation for treatment among users of different drugs, it is recommended that similar studies be done on the users of only one drug. The results of this study suggest the importance of attention to deviant personality traits in treatment plans on drug dependent people. Moreover, the increased perception of such people of the risks of addictive behaviors is considered as an important factor in the enhancement of treatment motivation among them.

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## Abstract

**Objective:** The current study was aimed to examine the effectiveness of stress management with behavioral–cognitive mode in the promotion of hope and socio-affective adjustment of drug abusers under methadone maintenance treatment. **Method:** A quasi-experimental research design, along with pretest-posttest and control group was employed for the conduct of this study. In this regard, the number of 20 drug abusers under methadone maintenance treatment was selected by convenience sampling method and these participants were assigned into experimental group (10 individuals) and control group (10 individuals). The participants received ten training sessions and, then, completed Snyder's Trait Hope Scale and Bell's Social Adjustment Scale (BAS). **Results:** The results of the study showed that there is a significant difference between the two groups in terms of hope and affective and social adjustment. In fact, the experimental group experienced a considerable promotion. **Conclusion:** It can be concluded that stress management accompanied by behavioral–cognitive training can be an effective interventionist method for the addicts under methadone maintenance treatment.

**Keywords:** Stress Management, Hope, Social-Affective Adjustment, Drug Abuse

# Effectiveness of Stress Management Training in Hope and Interpersonal Adjustment of Addicts under Treatment

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## Introduction

Drug abuse and its prevalence is considered among the main health concerns ahead of the Health and Law Organizations in any society. Huge costs are annually spent on the treatment of addicted people and thousands of people lose their lives because of substance abuse (Angres, Bologeorges & Chou, 2013; Cleck & Blendy, 2008). In a brief estimate, eight people lose their lives every day due to drug use. On the other hand, at least 100 new individuals are infected with drug use every day and more than 10 billion tomans is annually imposed on the country (Mozaffar, Zakariaei & Sabeti, 2009).

According to the UN Office for Drug Control and Crime Prevention (2005), there is the number of 200 million drug users among 15-64 year-old population around the world (cited in Karimian, Golzari & Borjali, 2012). The statistics show that the prevalence of drug use is on the rise and the age of the affected population is declining. Addiction is a disease that occasions various biological, psychological, and social consequences and there are different treatment programs in the field. The main goal of most treatment programs is to reduce or eliminate substance use (Ahmadi, Najafi, Hosseini Al-Madani & Ashoori, 2012). Long-term Residential Therapeutic Community, Bedridden Short Term Schedules, Drug-Free Outpatient Schedules, and Outpatient Methadone Schedules are among these interventions. Long-term Residential Program puts the clients under drug-free treatment in a residential society wherein the clients share their problems with counselors and the drug addicts who have recovered. In short-term inpatient programs, clients are physically stabilized and, then, they are encouraged to stay in the state of abstinence through taking some steps towards changing their lifestyles. In outpatient, drug-free programs, a wide range of psychosocial approaches, including 12-step programs are used. Finally, in outpatient methadone programs, the clients are given methadone so that their desire for drug use can be reduced and its impact can be prevented. They are also given advice and it is attempted to foster job skills in such individuals so that they can manage their lives (Halgin & Krauss Whitbourne, 2003, translated by Sayed Mohamadi, 2006).

Methadone maintenance therapies with substitution have been the main addiction treatment in the past thirty years. Researchers found that methadone can cause considerable reductions in desire for drug use, significant declines in the incidence of drug-related crime, and an increase in social functions (Rosenhan & Seligman, 2009, translated by Sayed Mohamadi, 2009). However, it seems that a wide range of factors is involved in therapeutic interventions, such as methadone maintenance programs. Oveisi & Bakhshani (2012) showed that addicted people suffer from early maladaptive schemas and these schemas have an important role in the unsuccessful addiction abstinence. According to Young theory (1999), early maladaptive schemas influence the way of thinking, feeling, and performance of patients, or the way patients communicate with others.



Hashemi, Fotoohi Bonab, Karimi & Bayrami (2010) also showed that substance abusers suffer from more irrational beliefs compared to normal individuals. They also showed that relapse of substance abuse is influenced by various psychological and environmental factors impact and, in this context; the role of cognitive beliefs (irrational beliefs), self-efficacy perceptions, and support networks has been emphasized. These irrational beliefs gradually lead to inability in coping with life issues (Matinejad, Mousavi Bojnordi & Shams Esfandabad, 2009).

Studies have shown that drug abusers tolerate severe emotional problems (for example, higher stress) when confronted with problems and, thus, they lose the opportunity of using efficient problem-solving strategies (Price & Herting, 2013, Koob, 2013, Geiber, 2012). Thus, exposure to stressful situations and use of inefficient emotion-focused problem-solving techniques lead to a vicious cycle and increased stress and decline of adjustment; finally, relapse rate in these subjects increases (Terracciano, Lockenhoff, Crum, Bienvenu & Costa, 2008; Pourkord, Abolghasemi, Narimani & Rezaei Jamalouyi, 2013; Karimi, Hemati Sabet, Ahmadpanah & Mohammadbeigi, 2013; Rostami, Ahadi & Cheraghali Gol, 2012; Ghasemi Hamed, Rabie, Haghayegh & Balahang, 2011). The increase of stress and employment of inefficient coping strategies lead to the experience of successive failures during treatment and negatively influence self-efficacy (Sinha, 2007; Lukman, Roseliza, Arifin, Zainah & Fatihah, 2010). The negative image of the self and reduction of self-efficacy result in reduced motivation. Since motivation (agency thinking) and strategies for goal achievement (strategic thinking) are among the hope factors; obviously, lack of motivation and lack of proper strategies to reach the goal (successful abstinence of drug use) result in the reduction of hope in drug abusers (Snyder, 2002).

Kornor & Nordyik (2007) showed that distinctive changes in personality, anxiety, depression, lack of anger control, and malicious behavior with family and friends constitute the behavioral, communicative, and social problems of drug abusers in treatment over time. Since human behavior is influenced by personality, family, and community factors, the placement of addicts in stressful situations leads to maladaptive behavior and emotional and social conflict. This highlights the necessity of using psychological interventions to help drug users come with the necessary compatibility. Group therapy is widely accepted as a psychological treatment for changing non-adaptive behavior and leading the thoughts and feelings among drug users to achieve better and more effective results. Several studies have examined the role of cognitive-behavioral psychotherapy, such as stress management training in the rehabilitation of substance abusers. The results of these studies have shown that cognitive-behavioral therapy changes the thoughts, expectations, and behaviors associated with drug use and provides the necessary circumstances to enhance the effectiveness of methadone treatment by the development and administration of the required training (Narimani, 2010; Ahmadkhaniha, Gharayipour & Panaghi,

2011; Karimian, et al., 2013). Stress management training can improve the quality of life of drug users (Karimian et al., 2012). It can also reduce anxiety and depression in substance abusers (Jandaghi, Neshat Doost & Jabal Ameli, 2009). With regard to the above-mentioned points, it can be assumed that such hope and adjustment are the important variables that can have a significant impact on the treatment of substance abusers. Despite numerous studies on the effectiveness of stress management training, the effectiveness of this test on adjustment and hope among the addicts under treatment has not been examined to date.

Stress management based on cognitive-behavioral therapy includes different techniques, such as relaxation, anger management and expressiveness, efficient coping, cognitive restructuring, increased self-efficacy, and social support. This training aims to reduce negative mood states and social exclusion and promote the emotional, affective, and social adjustment of abusers (Antoni, Lechner, Kazi & Wimberly, 2006). This training program helps people to adapt themselves in the face of the problems which they cannot change and to enhance self-efficacy and self-esteem through the training of efficient coping methods and cognitive restructuring. This training program leads to changes in the improvement of interpersonal relationships and establishment of intimate relations with family and friends along with a higher sense of empathy. These changes may be due to the reception of social support, expression of emotions, shared experiences in the group, and group support (Karimian, et al., 2012). The aim of this study was to evaluate the effectiveness of stress management training in hope and social-affective adjustment among the addicts under methadone maintenance treatment.

## **Method**

### **Population, sample, and sampling method**

A quasi-experimental research design, along with pretest-posttest and control group was employed for the conduct of this study. All the patients undergoing methadone maintenance treatment at Ariana medicine center in Tehran constituted the statistical population of this study. From among this population, the number of 20 drug abusers under methadone maintenance treatment was selected by convenience sampling method. Then, these participants were randomly assigned into experimental group (10 individuals) and control group (10 individuals). The mean score for the age of these participants was placed in the range of  $34.75 \pm 6.20$  years. The number of 12 participants (60%) was married and 8 patients (40%) were single. In addition, 70% of these people were just abusers of opiates (such as opium, opium extraction, heroin, and crack) and 30% of them also consumed psychoactive drugs in addition to the abuse of opiates. In terms of education, 20% of the participants were high school

graduates, 70% of them held a degree below diploma, and 10% of them held a degree higher than diploma.

### **Instrument**

1. Bell's Social Adjustment Scale (BAS): This scale was designed by Bell (1961) and measures adjustment in five subscales, namely coping at home, health (physical) adjustment, emotional (affective) adjustment, work adjustment, and social adjustment. A high score in each subscale represents higher adjustment.

The reliability coefficients of this scale for the subscales of coping at home, health adjustment, social adjustment, emotional adjustment, and work adjustment and the total scale were reported equal to .91, .81, .88, .91, .85, and .94, respectively. Moreover, a high validity has been reported for this test in distinguishing normal groups from neurotic groups through correlation with Eysenck Personality tests (Fathi Ashtiani & Dadsetani, 2009). The validity of this questionnaire was obtained through the selection of each area in a range of .50 difference between the upper and lower bounds of score distribution. On the other hand, counseling professionals' efforts and interaction with adults have led to the selection of the groups of individuals with adjustment in the range of very poor to very good. In this study, Cronbach's alpha coefficients were obtained equal to .84, .80, and .86 for total adjustment, affective adjustment, and social adjustment, respectively.

2. Snyder's Trait Hope Inventory: It is a 12-item scale, which was developed by Snyder (1996) to target the subjects above 15 years old. It measures two subscales, namely motivation (agency) and pathways. The items are scored based on an 8-point Likert scale from 1 (totally wrong) to 8 (totally right). Lopez & Snyder (2001) reported the internal consistency of the total test within the range of .74 to .84 and its test-retest reliability as .80. Kashdan (2002) reported alpha coefficient of .82 for the total scale and coefficients of .81 and .66 for agency and pathways, respectively. In Iran, the reliability of this inventory was assessed on 100 students and the Cronbach's alpha coefficients were obtained equal to .71 and .67 for agency and pathways, respectively (Shirinzadeh & Mirjafari, 2006). Golzari (2007) reported the internal consistency coefficient of .89 for the Persian version of this inventory. Aladdin et al. (2007) also reported internal consistency of .68 for the inventory (Zare Bavani, 2013). The hope inventory is highly correlated with the inventories measuring similar psychological processes. For example, the scores of hope scale have correlation of .50 to .60 with Scheier & Carver optimism scale (2010). In addition, the scores of this scale have been shown to be negatively correlated with Beck Depression Inventory scores (-.42 to -.51). According to clinical experts, the content validity of this inventory has been also confirmed. In this study, Cronbach's alpha of the scale was obtained equal to .71.

## Procedure

First, the patients were asked to announce if they wish to attend training sessions of stress management. Then, the number of 20 subjects enrolled for this program were randomly assigned into two groups, experimental ( $n = 10$ ) and control ( $n = 10$ ) groups. The training package, entitled stress management education package (Anthony et al., 2007) was applied. This package included ten 90-minute intervention sessions (two sessions per week) as described in table 1. It should be noted that all the sessions started with a review of the previous sessions and ended with relaxation exercises.

**Table 1: Content of stress management education package**

<i>Session</i>	<i>Content</i>
<b>First</b>	Administering pre-test and perceiving the importance and significance of the effects of physical and psychological stress, the importance of monitoring and managing stress levels, and producing a list of stressors (relaxation exercises)
<b>Second</b>	Understanding the relationship between thoughts and feelings; and learning assessment process (relaxation exercises with diaphragmatic breathing)
<b>Third</b>	Practicing the identification of different types of negative thoughts, understanding the impact of negative thoughts on behavior (relaxation exercises in illustration format)
<b>Fourth</b>	Identifying rational and irrational self-talk, teaching the steps for the substitute of rational thoughts (relaxation exercises in illustrated format along with diaphragmatic breathing )
<b>Fifth</b>	Learning a variety of coping, identifying coping styles of the self and effective coping (relaxation exercises in illustrated format along with diaphragmatic breathing)
<b>Sixth</b>	Learning and practicing effective coping steps, training to cope with severe stressors (relaxation exercises in illustration format along with positive visualization, sunlight meditation)
<b>Seventh</b>	Learning anger management (practicing mantra meditation)
<b>Eighth</b>	Learning interpersonal styles, practicing expressive communication and using problem-solving skills (meditation breath-counting exercises, resuming sunlight meditation)
<b>Ninth</b>	Understanding the benefits of social support, identifying obstacles to maintaining social support, learning stress management techniques to maintain social support (relaxation exercises in illustrated format along with diaphragmatic breathing)
<b>Tenth</b>	Doing personal stress management training program, such as: a complete review of the program, planning for domestic relaxation exercises, creating a personal stress management program, conducting the posttest (practicing mantra meditation)

## Results

Descriptive findings of hope and adjustment scales are presented in table 1 for both pre-test and post-test. Before the conduct of any statistical analysis, data screening was done at the level of items and subscales in order to detect outliers. To this end, Mahalanobis distance of the variables showed that the maximum values of the index for the data pertaining to Bell Adjustment Scale and Hope Scale were 8.73 and 10.10, respectively, which are smaller than the pertaining critical values, i.e. 13.82 and 10.83 (chi-square distribution with degrees of freedom of 2 and 1). On the other hand, index of maximum value of cook's distance corresponding to the data were .14 and .32, which was lower than the corresponding critical value, i.e. one. These findings represent the absence of outliers in the data of the two variables.

**Table 2: Descriptive statistics of the sample group for the variables under study**

<i>Variable</i>	<i>Group</i>	<i>Test type</i>	<i>Mean</i>	<i>SD</i>
<b>Adjustment (affective)</b>	Experimental	Pretest	16.20	6.05
		Posttest	16.20	5.10
	Control	Pretest	14.30	6.45
		Posttest	14.30	6.68
<b>Adjustment (social)</b>	Experimental	Pretest	10.90	5.32
		Posttest	14	5.70
	Control	Pretest	12.10	5.61
		Posttest	11.70	6.36
<b>Hope</b>	Experimental	Pretest	23.70	4.08
		Posttest	25.90	2.38
	Control	Pretest	26.20	2.39
		Posttest	25.90	2.38

Before data analysis on Bell Adjustment Scale, different assumptions and indexes were examined as follows: the non-linearity of the relationship between dependent variables, normal distribution of variables, absence of singularity and multicollinearity, equality of covariance matrices, and equality of error variances for the two groups (Meyers, Gamst & Guarino, 2006; Tabachnick & Fidell, 2007).

Linearity of the relationship between the dependent variables was performed by examining via bivariate scatter plot of the data. These plots did not represent a special case of non-linearity. Shapiro-Wilk normality test was also conducted and the results suggested the non-significance of all the variables at significance level of .001. Therefore, normality assumption would not be problematic for the present analysis. The linearity and singularity assumptions were also examined using variance increasing factor and tolerance coefficients (Tabachnick & Fidell, 2007; Pallant, 2007). The results pertaining to the equality of covariance matrices also represented its non-significance for the data relating to Bell's Adjustment Scale ( $p < .05$ ,  $df = (1,18)$ ,  $F = .27$ ,  $M \text{ Box} = .93$ ). Levene's test was

conducted to examine equality of error variances and it suggested the satisfaction of this assumption for affective adjustment subscale ( $p < .05$ ,  $df = (1, 18)$ ,  $F = .34$ ) and social adjustment subscale ( $p < .05$ ,  $df = (1, 18)$ ,  $F = .373$ ). Hence, the total results show that the assumptions have been met.

Multivariate analysis of variance was used to examine the difference in pre-test and post-test measurements and the results showed that the change trend in experimental and control groups is different between pre-test and post-test ( $\eta^2 = .58$ ,  $P < .05$ ,  $df = (2, 15)$ ,  $F = 10.32$ ,  $T2_{Hotelling} = 1.38$ ). This profile implies that Bell's Adjustment Profile is different between experimental and control groups after the elimination of pre-test effect.

**Table3: Results of ANOVA representing the comparison of the effectiveness of the intervention in adjustment components**

<i>Component</i>	<i>Sum of squares</i>	<i>df</i>	<i>F</i>	<i>Sig.</i>	<i>Effect size</i>
<b>Affective adjustment</b>	83.03	1	14.53	.002	.48
<b>Social adjustment</b>	.4	1	10.47	.005	.39

Before the conduct of ANCOVA on the data of the Hope Scale, the following assumptions were examined: covariate reliability, linearity of the relationship between the covariate and dependent variable, homogeneity of regression slope, homogeneity of variance error. Since the reliability coefficient of hope scale in this study was slightly larger than .7 (Tabachnick & Fidell, 2007; Pallant, 2007), the bivariate scatter plot between the covariate and dependent variable showed the non-linearity of the relationship. The normality of data distribution was also checked via Shapiro-Wilk test. The index was not significant for any of the variables at the significance level of .001. Homogeneity of regression slope was also analyzed using the interaction method of the group variable with the pre-test ( $P > .05$ ,  $df = 1$ ,  $F = .27$ ). The results showed that the assumption of homogeneity of regression slope has been met. Levene's test results, examining the assumption of homogeneity of error variances indicated that the assumption has been met for the data of Hope Scale ( $P > .05$ ,  $df = (1, 18)$ ,  $F = 3.81$ ). Thus, since the assumptions had been met, the analysis was conducted and the results represented no significant difference between the two groups ( $P > .05$ ,  $F = 1.98$ ).

### **Discussion and Conclusion**

This study was conducted to examine the effectiveness of stress management with behavioral–cognitive mode in the promotion of hope and socio-affective adjustment of the drug abusers under methadone maintenance treatment. The results showed that cognitive-behavioral stress management training can be used as a helpful intervention for the improvement of hope, social adjustment, and affective adjustment among drug addicts. These findings are consistent with those of the studies conducted by Koffler & Bartlett (2012) and Jandaghi, et al. (2009). The mentioned studies indicated the effectiveness of cognitive-behavioral stress management intervention in negative emotions, anxiety, and

depression. The effectiveness of cognitive-behavioral stress management in affective (emotional) adjustment can be explained by the fact that drug-dependent individuals try to immediately prevent and relieve their negative emotions; therefore, they use emotion-focused methods more than problem-focused ones (Cleck & Blendy, 2008). In stress management training, the relationship between emotions, thoughts, and behaviors is taught to people. Therefore, they learn that negative automatic thoughts cause negative emotions and behaviors. Considering these points, individuals can improve their behavior through cognitive restructuring and replacement of thoughts (Safarzadeh, Roshan & Shams, 2012). On the other hand, teaching effective coping strategies leads to the increased use of problem-focused strategies in substance abusers (Price & Herting, 2013; Mate, 2012). In the same way, anger management approaches, relaxation practice, and mental imagery lead to higher control of people over emotions and increased concentration on the application of the methods that entail cognitive processes.

The effectiveness of stress management training based on cognitive-behavioral therapy in the enhancement of drug abusers' social adjustment can be explained in such a way that the following items bring about increased interpersonal relationships and social adjustment: 1. provision of necessary solutions to receive social support through the expression of feelings and thoughts to others, and 2. Provision of appropriate methods of self-assertiveness (Dortaj, Shakiba & Shakiba, 2011). The results of this research are consistent with the findings of other studies in this area (Karimi, et al., 1392; Wander, et al., 2007). The results showed that cognitive-behavioral training of anger management will improve communication skills and the quality and quantity among addicts and will make them communicate more effectively with others. Thus, it can be assumed that communication skills will help increase social adjustment (Papastavrou, Farmakas, Karayiannis & Kotrotssiou, 2010; Sinha, 2009; Price & Herting, 2013; Mate, 2012; Angres, et al., 2013). On the other hand, drug abusers do not employ appropriate strategies to achieve the objectives in the face of stress and this leads to their failure in the achievement of their goals (Matinnejad et al., 2009; Sinha, 2007). It is possible to promote the hope level of addicts by providing efficient coping methods. In this regard, the present study is in the same line with the findings of other studies (Bijari, Ghanbari Hashemabadi, Aghamohammadian Sherbaf & Homayi Shandiz, 2009). According to the findings of this study, if these people are able to use more suitable methods in the face of stressors, their sense of self-efficacy and self-esteem will rise and ultimately hope levels will increase. On the other hand, reception of social support and trust to others can increase the level of hope. Increase in the level of hope among substance abusers can be accounted for in such a way that the provision of efficient problem-solving methods and reception of social support will lead to the hope promotion abusers. Price & Herting (2013) showed that women's social and emotional problems are equal to those of men;

however, these problems may be even more serious in women than those in drug-dependent men and in some cases. For example, the likelihood of incidence of violence and delinquency in women will experience a 6-fold increase (Walsh, 2007). Therefore, the use of cognitive-behavioral therapy in drug-dependent women makes this type of treatment be more practical. Therefore, the necessity of the application of cognitive-behavioral therapies in drug-dependent women causes this type of treatment and therapies of this category may represent aspects that are more practical. In the present study, there was no possibility of conducting this training program in women because they were reluctant to participate in group therapy. Therefore, the researchers are recommended to examine drug abusers' adjustment in various aspects such as adjustment at home, health adjustment, and work adjustment. Secondly, studies should be done more extensively and with a larger number of experimental groups and both genders should be included in the sample in the future studies.

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